

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

CHRISTENSON OIL MSDS #DWO68

PAGE 1 OF 5

PRODUCT CODE NO.: NONE

MANUFACTURER: CHRISTENSON OIL 3747 N. SUTTLE RD. P.O. BOX 17339 PORTLAND, OREGON 97217 CONTACT FOR FURTHER INFORMATION: CALL (503) 286-1673		TRANSPORTATION EMERGENCIES: CALL CHEMTREC (800) 424-9300 CONTINENTAL U.S.		
PRODUCT IDENTIFICATION				
PRODUCT NAME		: DUREX HEAVY DUTY WAY OIL 68		
SYNONYMS		: WAY OIL		
GENERIC NAME		: WAY OIL 68		
CHEMICAL FAMILY		: PETROLEUM HYDROCARBON; INDUSTRIAL OILS		
DOT PROPER SHIPPING		: NOT DOT REGULATED		
ID NUMBER		: NONE		
ACUTE HEALTH 1	FIRE 1	REACTIVITY 0	HAZARD RATING LEAST -0 MODERATE -2 EXTREME -4	SLIGHT HIGH -1 -3

SECTION I - INGREDIENTS			
NO.	COMPOSITION	CAS NUMBER	PERCENT



P	DUREX HEAVY DUTY WAY OIL 68	MIXTURE	100
1	PETROLEUM BASESTOCK	64742-18-3	0-100
2	PETROLEUM BASESTOCK	64742-70-7	0-100
3	POLYMERIC ADDITIVE	MIXTURE	0-1
4	WAY OIL ADDITIVE	MIXTURE	0-10

MATERIAL SAFETY DATA SHEET

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CHRISTENSON OIL MSDS#DWO68

SECTION I - B - ACUTE TOXICITY DATA

NO.	ACUTE ORAL LD50	ACUTE DERMAL LD 50	ACUTE INHALATION LC50
P	NOT AVAILABLE		

SECTION II - EMERGENCY AND FIRST AID PROCEDURES**EYE CONTACT:**

Flush with water for 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT:

Remove contaminated clothing and wipe excess off. Wash with soap and water or a waterless hand cleaner followed by soap and water. If irritation occurs, get medical attention.

INHALATION (BREATHING):

Remove victim to fresh air and provide oxygen if breathing is difficult. Get medical attention.

INGESTION (SWALLOWING):

Do not induce vomiting. In general, no treatment is necessary unless large quantities of product are ingested. However, get medical advice.

NOTE TO PHYSICIAN:

In general, emesis induction is unnecessary in high viscosity, low volatility products, i.e., most oils and greases.

SECTION III - OCCUPATIONAL EXPOSURE LIMITS

OSHA

ACGIH

NO.	PEL/TWA	PEL/CEILING	TLV/TWA	TLV/STEL	OTHER
P	5MG/M3*	NONE	5MG/MG*	10MG/M3*	N/AV

NOTE:

* Oil mist, mineral oil.

MATERIAL SAFETY DATA SHEET

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CHRISTENSON OIL MSDS#DWO68

HEALTH INFORMATION

The health effects noted below are consistent with requirements under the OSHA hazard Communication Standard (29 CFR 1910.1200)

EYE CONTACT

Lubricating oils are generally considered no more than mildly irritating to the eyes.

SKIN CONTACT

Lubricating oils are generally considered no more than mildly irritating to the skin. Prolonged and repeated contact may lead to various skin disorders such as dermatitis, oil acne or folliculitis.

INHALATION

Inhalation of vapors (generator at high temperatures only) or oil mist from this product may cause minor irritation of the mucous membranes of the upper respiratory tract.

INGESTION

Lubricating oils are generally considered no more than slightly toxic if swallowed.

SIGNS AND SYMPTOMS

Irritation as noted above.

AGGRAVATED MEDICAL CONDITIONS

Pre-existing skin and respiratory disorders may be aggravated by exposure to this product.

OTHER HEALTH EFFECTS

SEE SECTION V FOR ADDITIONAL HEALTH INFORMATION.

SECTION IV - SPECIAL PROTECTION INFORMATION**RESPIRATORY PROTECTION:**

If exposure may or does exceed occupational exposure limits use an NIOSH approved respirator to prevent overexposure. In accordance with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapor.

PROTECTION CLOTHING

The use of gloves impermeable to the specific material handled is advised to prevent skin contact and possible irritation.

MATERIAL SAFETY DATA SHEETS

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CHRISTENSON OIL MSDS#0W068

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS AND MATERIALS TO AVOID:

Avoid heat, open flames and oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

Smoke, carbon monoxide, aldehydes and other products of incomplete combustion.

SECTION - FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD:
410 DEF P (COC)

FLAMMABLE LIMITS / % VOLUME IN AIR
LOWER: N/AV UPPER: N/AV

EXTINGUISHING DATA

Use water fog, foam, dry chemical or CO₂. Do not use a direct stream of water. Product will float and can be reignited on surface of water.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Material will not burn unless preheated

DOT FLAMMABILITY
CLASSIFICATION

NOT REGULATED 381F (COC)

EXTINGUISHING MEDIA:

EXTINGUISH WITH DRY CHEMICAL, CO₂, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.

FIRE & EXPLOSION HAZARDS:

THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:

WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINER EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSE. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL MSDS #DWO68

PAGE 5 OF 5

SECTION IX - PHYSICAL DATA

APPROX BOILING POINT	VAPOR DENSITY	EVAPORATION RATE	% VOLATILE
+600F (316C)	HEAVIER THAN AIR	SLOWER THAN ETHER	NEGLIGIBLE

% SOLUBILITY IN WATER	SPECIFIC GRAVITY	APPEARANCE	ODOR
NEGLIGIBLE	N/A	CLEAR, BROWN LIQUID	CHARACTERISTIC

SECTION X - PRECAUTIONARY LABEL

CAUTION! USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TEST WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADEQUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

SECTION XI - DOCUMENTARY INFORMATION

ISSUE DATE	:	July 17, 1995	PRODUCT CODE NO.	:	NONE
MSDS NO.	:	DWO68	PREV. PROD. CODE NO.:	:	DWO68
			PREV. MSDS NO.	:	NONE

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.

This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

Attachment for Response to DEQ Comment 6 and 9

ENVIRONMENTAL EVALUATION
PROPOSED MANUFACTURING MANAGEMENT, INC. SITE
. (LAMPROS STEEL)
ST. JOHNS DISTRICT, PORTLAND, OREGON

April 4, 1988

Submitted To Attorneys For:

Manufacturing Management, Inc.
4927 NW Front Avenue
Portland, Oregon 97210

Submitted By:

Sweet-Edwards/EMCON, Inc.
P.O. Drawer B
Kelso, Washington 98626



T2401.02

Attachment for Response to DEQ Comment 7

Attachment for Response to DEQ Comment 11

LEVEL II
ENVIRONMENTAL SITE ASSESSMENT
ST. JOHNS RIVERFRONT PROPERTY
PORTLAND, OREGON

Prepared for
GRAYCO RESOURCES, INC.

March 15, 1989

CSA CUMMINGS, SENKEL & ASSOCIATES
CONSULTING ENGINEERS

HARVEY L. CUMMINGS, P.E.
Principal

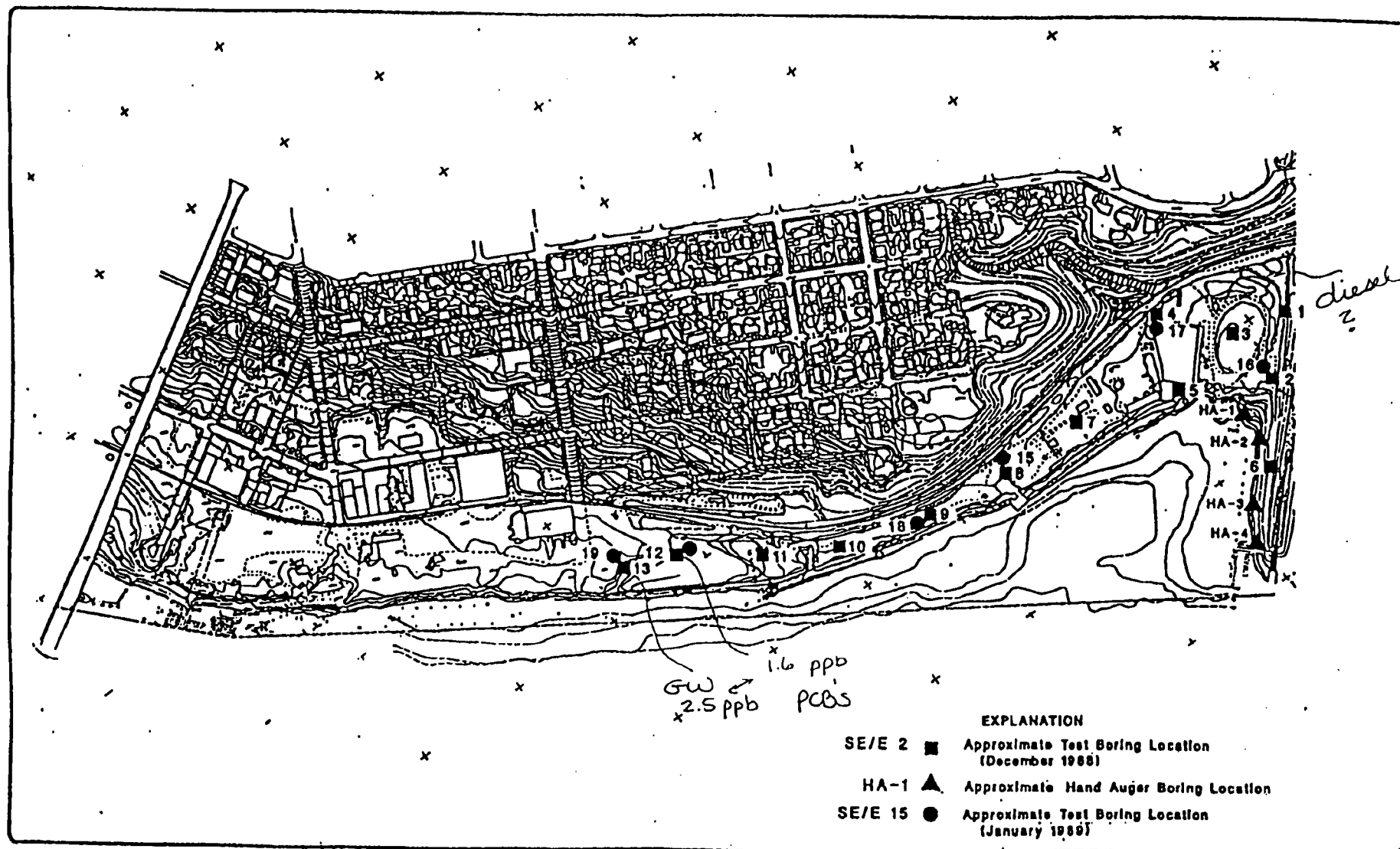
250 W. Clarendon, Gladstone, Oregon 97027
(503) 557-0506 Fax (503) 659-1040

SWEET-EDWARDS/EMCON, INC.
7504 S.W. Bridgeport Rd.
Portland, OR 97224

GRAYCO-R.315 LK
T8701.01

Rev. 1 3/15/89

CRAW00014331



Sweet-Edwards
EMCON

0 350 700
Scale in Feet



GRAYCO/ST. JOHNS RIVERFRONT PROPERTY
Test Boring and Hand Auger Boring Location Map

Figure 8

DATE 11-15-88
BY: [Signature]
APP: [Signature]
REV: [Signature]
PROJECT NO. 000101

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-13
 PAGE 1 OF 1
 REFERENCE ELEV. 14
 TOTAL DEPTH 35.00'
 DATE COMPLETED 12/9/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	60	2-30 (NA)		5				0-5.5' Sandy clayey SILT, black, low to medium plasticity, wet (ML).
								5.5-6.5' Brick Rubble.
S-2	90	4-9-12 (21)		10				6.5-10.5' Silty CLAY, black, moderate to high plasticity, moist to wet (OH).
								10.5-15' Sandy silty CLAY, light brown, moderate plasticity, moist (CL). --- red brick rubble at 11.25 to 11.5 feet.
S-3	95	3-7-8 (15)		15				15-20' Silty clayey SAND, light brown, fine grained, moist (SM).
S-4	65	4-6-8 (14)		20				20-25' Poorly graded SAND, grayish-brown, fine grained, trace silt, moist (SP).
S-5	100	2-4-4 (8)		25				25-30.5' Sandy silty CLAY, brownish-gray, moderate to high plasticity, moist (CL).
								--- first encountered water at 30.5 feet.
S-6	120	3-5-8 (13)		30				30.5-35' clayey silty SAND, grayish-brown, fine to medium grained, oily sheen on water and 30 foot soil sample, saturated (SM).
				30.5'				Bottom of boring at 35 feet.
				35				

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. Minor oily sheen on water sample. Drilled to 35 feet to enhance sampling. Backfilled with bentonite.





SWEET-EDWARDS/EMCON

T8701... GRAYC. JLG. 610489

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY S. Ryman

BORING NO. SE/E-19
 PAGE 1 OF 1
 REFERENCE ELEV. \pm
 TOTAL DEPTH 31.50'
 DATE COMPLETED 1/27/89

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1		2-3-4		30 30.5'				0-31.5' SAND, brown, medium-to-fine with minor silt, 15% silt, 30% medium sand, 55% fine, moist. --- color change to gray at 30 feet. --- first encountered water at 30.5 feet. Bottom of boring at 31.5 feet.

REMARKS

Drilled adjacent to SE/E-3.



SWEET-EDWARDS/ENCON

T8701.01.GRAYC.JLC.020789

TABLE 3
GRAYCO/ST. JOHNS RIVERFRONT PROPERTY
GROUND WATER SAMPLE TESTING PARAMETERS

SAMPLE I.D.	SAMPLE COLLECTION DATE	PRIORITY POLLUTANT METALS*	TOX	PCB	PAH	PENTA- CHLORO- PHENOL	VOLATILE ORGANICS METHOD 601	PESTICIDES METHOD 608	VOLATILE ORGANICS METHOD 624	BASE NEUTRAL EXTRACTABLES METHOD 625	HYDROCARBON SCAN METHODS 3510/8015 MODIFIED
SE/E-1	12/5/88	X	X	X	X	X					
SE/E-2	12/5/88	X		X	X	X			X	X	
SE/E-3	12/6/88	X	X	X	X	X					
SE/E-4	12/6/88	X	X	X	X	X					
SE/E-5	12/6/88	X	X	X	X	X					
SE/E-6	12/7/88	X		X	X	X			X	X	
SE/E-7	12/7/88	X	X	X	X	X					
SE/E-8	12/7/88	X	X	X	X	X					
SE/E-9	12/8/88	X	X	X	X	X					
SE/E-10	12/8/88	X	X	X	X	X					
SE/E-11	12/8/88	X	X	X	X	X					
SE/E-12	12/9/88	X	X	X	X	X					
SE/E-13	12/9/88	X	X	X	X	X					
SE/E-14	1/26/89			X**							
SE/E-17	1/26/89	X**					X	X			
SE/E-19	1/27/89			X ¹							X ²
HA-4W	12/12/88	X	X	X	X	X					

NOTE:

TOX = Total Organic Halides

PCB = Polychlorinated Biphenols

PAH = Polyaromatic Hydrocarbons

* = Samples SE/E-1 through SE/E-5 were not field filtered.

** = Filtered and unfiltered samples collected.

1 = Filtered water sample and unfiltered water with concentrated oil sheen.

2 = Test conducted on oil from SE/E 19 unfiltered water sample.

GRAYC-T3.315 PE
T8701.01

CRAW00014335

TABLE 4, continued

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BORING I.D.	SAMPLE I.D.	SAMPLE INTERVAL ft.	DATE COLLECTED	DATE SCREENED	PID*	SAMPLE SUBMITTED FOR TESTING	COMPOSITE SAMPLE IDENTIFICATION
SE/E-13	SE/E-13-5	5-6.5	12/9/88	12/10/88	49	**	SE/E-13-A
	SE/E-13-10	10-11.5	12/9/88	12/10/88	48	**	
	SE/E-13-15	15-16.5	12/9/88	12/10/88	51	X	SE/E-13-B
	SE/E-13-20	20-21.5	12/9/88	12/10/88	18	**	
	SE/E-13-25	25-26.5	12/9/88	12/10/88	35	**	
SE/E-14	SE/E-14	30.5-32	1/26/89	NA	NA	X	NA
SE/E-15	SE/E-15-20	20-21.5	1/26/89	NA	NA	X	NA
SE/E-16	SE/E-16-10	10-11.5	1/26/89	NA	NA	X	NA
SE/E-19	SE/E-19-30	30-31.5	1/27/89	NA	NA	X	NA

NOTE:

*PID = Photoionization detector
 NA = Not applicable

GRAYC-T4.315 PE
 T8701.01

TABLE 5
GRAYCO-ST. JOHNS RIVERFRONT PROPERTY
SOIL QUALITY LABORATORY RESULTS

SAMPLE I.D.	PCB (mg/kg)	TOX (mg/kg)	OIL AND GREASE (%)	BTEX METHOD 820 (mg/kg)	HYDROCARBON SCAN (mg/kg)
SE/E-1-10	ND	1	<0.02		
SE/E-2-10	ND	2	0.068		
SE/E-3-10	ND	ND	<0.02		
SE/E-4-20	ND	ND	<0.02		
SE/E-5-10	ND	ND	<0.02		
SE/E-6-20	ND	ND	<0.02		
SE/E-7-10	ND	1	<0.02		
SE/E-8-20	ND	1	0.054		
SE/E-9-15	ND	ND	<0.02		
SE/E-10-25	ND	ND	<0.02		
SE/E-11-15	ND	ND	<0.02		
SE/E-12-A*	ND				
SE/E-12-15	ND	ND	<0.02		
SE/E-12-B*	ND				
SE/E-13-A*	ND				
SE/E-13-10	ND	1	<0.02		
SE/E-13-B*	ND				
SE/E-14	ND				
SE/E-15-20				ND	ND
SE/E-16-10				ND	ND
SE/E-17	No soil samples taken.				
SE/E-18	No soil samples taken.				
SE/E-19-30	ND			ND	ND
HA-1*	ND	1	<0.02		
HA-2*	ND	2	0.052		
HA-3*	ND	ND	0.056		
HA-4*	ND	ND	<0.02		
Detection Limits	1.0	1.0	0.02	.05	5

GRAYC-T5.315 PE
T8701.01

Table 5 (Continued)

NOTE:

PCB = Polychlorinated Biphenyl

TOX = Total Organic Halides

BTEX = Benzene, Toluene, Ethylbenzene, Xylene

Hydrocarbon Scan - Diesel, Gasoline

* = Composite Soil Samples

GRAYC-T5.315. PE
T8701.01

TABLE 6
GRAYCO-ST. JOHNS RIVERFRONT PROPERTY
GROUND WATER QUALITY LABORATORY RESULTS
SELECT ORGANIC CONSTITUENTS (ug/L)

SAMPLE I.D.	PCB	TOX	PAH	PENTA- CHLORO- PHENOL	PESTICIDES METHOD 608	VOLATILE ORGANICS METHOD 601
SE/E-1	ND	39	ND	ND	-	-
SE/E-2	ND	*	ND	ND	-	-
SE/E-3	ND	34	ND	ND	-	-
SE/E-4	ND	44	ND	ND	-	-
SE/E-5	ND	21	ND	ND	-	-
SE/E-6	ND	*	ND	ND	-	-
SE/E-7	ND	26	ND	ND	-	-
SE/E-8	ND	13	ND	ND	-	-
SE/E-9	ND	28	ND	ND	-	-
SE/E-10	ND	14	ND	ND	-	-
SE/E-11	ND	12	ND	ND	-	-
SE/E-12	2.5	7	ND	ND	-	-
SE/E-13	1.6	17	ND	ND	-	-
SE/E-14	ND**	-	-	-	-	-
SE/E-17	-	-	-	-	ND	ND
SE/E-19	ND***	-	-	-	-	-
HA-4	ND	45	ND	ND	-	-
Detection Limits	1 ¹	5	1	10	Variable	Variable

GRAYC-T6.315 PE
T8701.01

Table 6 (continued)

NOTE:

Detection Limits 0.2

- * = Tested for volatile and semivolatile organic compounds, Methods 8240 and 8270. No compounds were detected.
 - ** = Filtered and unfiltered sample
 - *** = Filtered water and unfiltered water with concentrated oil sheen tested.
 - = Not tested.
 - 1 = Detection limit for oil contaminated sample from SE/E 19 was 1 ppm.
- PCB = Polychlorinated Biphenyl (Total Arachlor)
TOX = Total Organic Halides
PAH = Polyaromatic Hydrocarbons
-

GRAYC-T6.315 PE
T8701.01

Table 5-2

**Summary of Soil Samples Collected
and Laboratory
Analysis
Trust for Public Land, St Johns Riverfront Property**

Analysis Requested *													
Sample ID	Collector	Hydro- carbon Scan	Oil and Grease	TOX	BTEX	VOC	SVOC	PCBs	PCP	PCBs	PAHs	Priority Pollutant	Archived *
		(8015M)	(8260)			(8270)	(8080)	(8150A Mod.)	(8080)	(8310)	Metals *		
Area 1: Portland Manufacturing Co. (Plylock Corp), Plywood Mill													
<u>Test Pits</u>													
TP-1													X
TP-2						X							
TP-3						X				X		X	
TP-4													X
A1C1		X					X						
A1C2										X		X	
<u>Test Borings</u>													
SE/E-10-25	SE/E		X	X				X					
SE/E-11-15	SE/E		X	X				X					
SE/E-12-A ^d	SE/E							X					
SE/E-12-15	SE/E		X	X				X					
SE/E-12-B ^d	SE/E							X					
SE/E-13-A ^d	SE/E							X					
SE/E-13-10	SE/E		X	X				X					
SE/E-13-B ^d	SE/E							X					
SE/E-14	SE/E							X					
SE/E-16-10	SE/E	X			X			X					
SE/E-19-30	SE/E	X			X			X					
TB-1-15S						X							
TB-1-SC1								X					
Area 2: Port of Portland, Dry Dock and Shops													
<u>Test Pits</u>													
TP-6													X
TP-7										X			
TP-7A													X
TP-8													X
TP-9						X							
TP-9A													X
TP-10													X
A2C1		X									X		
A2C2												X	
A2C3												X	
A2C4										X			
<u>Test Borings</u>													
SE/E-7-10	SE/E		X	X				X					
SE/E-8-20	SE/E		X	X				X					
SE/E-9-15	SE/E		X	X				X					
SE/E-15-20	SE/E	X			X			X					
TB-2-15S						X							
TB-2-SC1										X			X

**Summary of Soil Samples Collected
and Laboratory
Analysis
Trust for Public Land, St Johns Riverfront Property**

CRAW00014343

Table 5-8

**Summary of PAHs Detected in Sediment Samples
(ug/Kg)
Trust for Public Land, St Johns Riverfront Property**

Analyte	MRL	Sample Identification		
		A1-SD-1 ^a	A2-SD-2 ^a	A3-SD-3 ^a
Napthalene	0.1	0.5	<0.3	<0.3
Acenaphthylene	0.1	0.5	<0.3	<0.3
Acenaphthene	0.1	0.5	<0.3	<0.3
Fluorene	0.02	<0.1	<0.06	0.09
Phenanthrene	0.01	1.4	0.14	0.21
Anthracene	0.01	0.18	0.03	0.06
Fluoranthene	0.02	2	0.23	0.37
Pyrene	0.02	2.7 ^b	0.2	0.35
Benz(a)anthracene	0.01	1.5	0.09	0.15
Chrysene	0.01	2.9 ^b	0.13	0.21
Benzo(b)fluoranthene	0.02	1.3	0.11	0.18
Benzo(k)fluoranthene	0.01	0.67	0.05	0.08
Benzo(a)pyrene	0.01	1.9	0.1	0.15
Dibenzo(a,h)anthracene	0.01	<0.2 ^c	<0.03	<0.3
Benzo(g,h,i)perylene	0.02	1.6	0.1	0.11
Indeno(1,2,3-cd)pyrene	0.01	0.98	0.05	0.06

Note:
MRL = method reporting limit.
a = MRLs are elevated because of the low percent solids in the sample as recieved.
b = Result is from the analysis of a diluted sample, performed on 11/2/95. Dilution factor: 50.
c = MRL is elevated because of matrix interferences and because the sample required diluting. Dilution Factor: 5.

Table 5-9

**Summary of Metals Detected in Sediment Samples
(mg/Kg)
Trust for Public Land, St Johns Riverfront Property**

Analyte	Sample Identification			
	MRL	A1-SD-1*	A2-SD-2*	A3-SD-3*
Antimony	10	ND	ND	ND
Arsenic	1	4	4	4
Berillium	1	ND	ND	ND
Cadmium	1	ND	ND	ND
Chromium	2	18	33	33
Copper	2	26	60	84
Lead	20	24	28	53
Mercury	0.2	ND	ND	0.2
Nickel	10	20	23	23
Selenium	1	ND	ND	ND
Silver	2	ND	ND	ND
Thallium	1	ND	ND	ND
Zinc	2	103	131	178
Note: MRL = method reporting limit ND = not detected above the MRL				

EXPLORATORY TEST PIT LOG

PROJECT NAME *TP-2*
LOCATION *54 Johns*
DUG BY *Stratus, Inc.*
METHOD *Backhoe*
LOGGED BY *Mike Free*

TEST PIT NO. *TP-2*
PAGE *1*
GROUND ELEV. *4.0*
TOTAL DEPTH *4.0*
DATE COMPLETED *10/20/15*

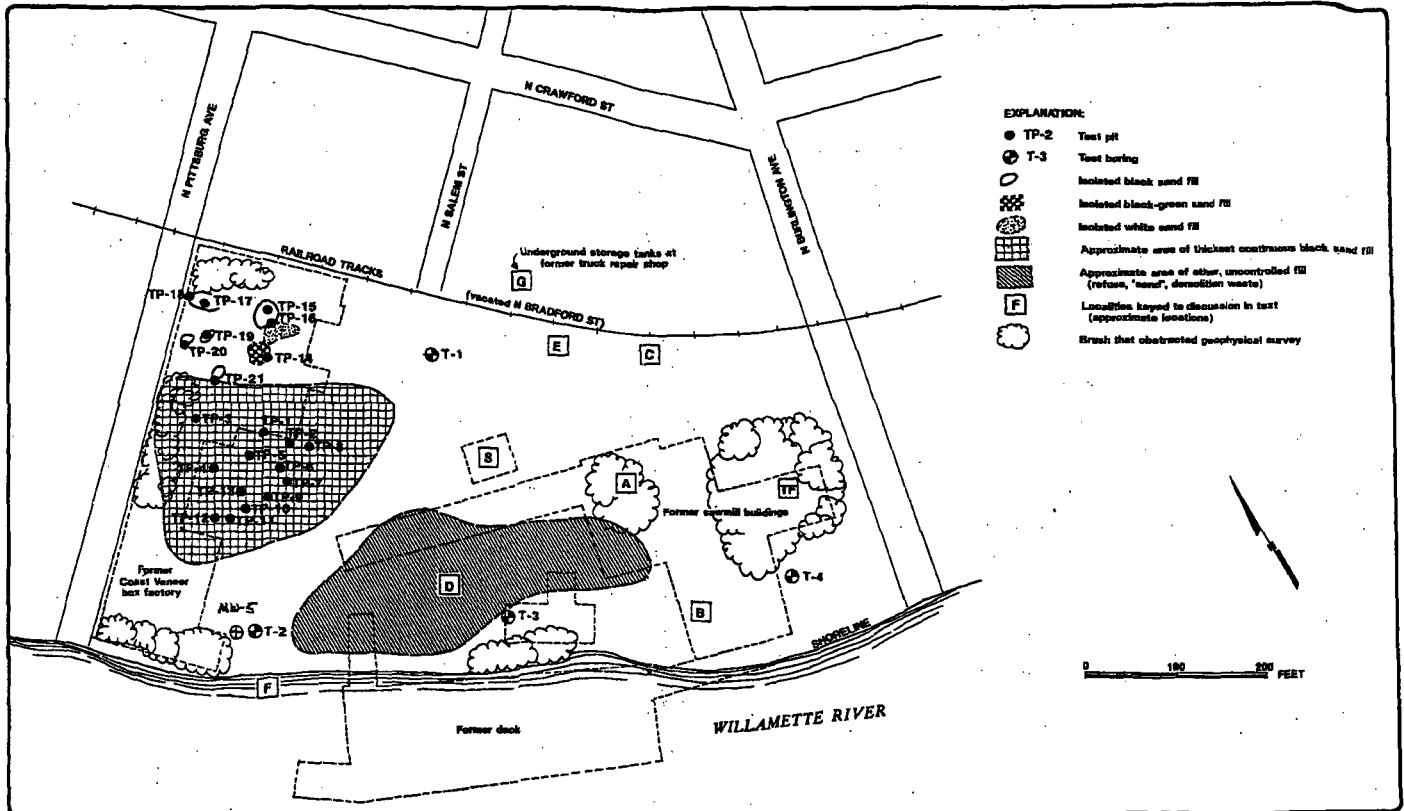
Sample # (+line)	Sample Depth (ft)	FID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
<i>TP-2</i> <i>(1115)</i>	<i>0-4.0</i>	<i>0</i>					<i>0-4 ft: sandy gravelly silt, brown (various shades) compact; damp; common asphalt debris, some concrete and ceramic. fine to coarse gravel (FILL) few plastic, wood</i>
				5			
				10			
				15			
				20			

REMARKS



.....SEELP

Attachment for Response to DEQ Comment 12



Sweet-Edwards
EMCON

PDC PROPERTY
PORTLAND, OREGON
Site Map

Figure 2

DATE: 7/89
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Preliminary Assessment

Crawford Street Site Portland, Oregon

Prepared for
Crawford Street Corporation

February 10, 2000

BRIDGEWATER GROUP, INC.

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SECTION 1

INTRODUCTION

This Preliminary Assessment (PA) report presents the results of a PA performed for the Crawford Street Corporation (CSC) site in Portland, Oregon (Figure 1-1). The site includes current addresses of 8424 and 8524 North Crawford Street. This PA was requested by the Oregon Department of Environmental Quality (DEQ) and is being performed under a DEQ Voluntary Cleanup Letter Agreement dated November 8, 1999.

1.1 Purpose of the Preliminary Assessment

The purpose of the PA is to assess the potential for releases of hazardous substances to have occurred at the CSC site and for the releases, if they have occurred, to have migrated to the Willamette River sediments and caused a threat to human health or the environment. Based on the October 1, 1999 DEQ Site Strategy Recommendation for the CSC site, the contaminants of interest (COIs) in the Willamette River sediments adjacent to the CSC site are:

- Arsenic
- Lead
- Mercury
- Di-n-butylphthalate
- Low molecular weight polynuclear aromatic hydrocarbons (LPAHs)
- High molecular weight polynuclear aromatic hydrocarbons (HPAHs)
- Organotins

The PA specifically assesses the potential for these COIs to have been released on the CSC site during CSC's ownership of the site and to have migrated to the Willamette River.

This PA also identifies a soil sampling program to further assess whether COIs may have been released from the CSC site and may have migrated to the Willamette River.

1.2 Scope of Preliminary Assessment

The PA was performed by reviewing available historical information, performing a site reconnaissance, and interviewing available persons familiar with the current and past site operations. Specific sources of information reviewed included:

- Sanborn Fire Insurance maps from 1905, 1911, 1924, 1950, and 1969.
- Aerial photographs from the U.S. Army Corps of Engineering and Northern Lights Studio from 1936, 1939, 1940, 1948, 1955, 1956, 1957, 1961, 1963, 1964, 1967, 1968, 1970, 1971, 1972, 1973, 1977, 1980, 1984, 1991, 1994, 1996, and 1998.
- City Directories for 1936, 1941, 1950, 1955, 1960, 1970, 1975, 1980, 1985, 1990, and 1998.
- Historical photographs from the Oregon Historical Society for the late 1800s, early 1900s, and 1932.

A site reconnaissance was performed on December 9 and 21, 1999. Representatives of CSC and the current property tenants were interviewed during the site visits.

SECTION 2

CURRENT SITE CONDITIONS AND OPERATIONS

The CSC site is an approximately 15-acre site located along the Willamette River in the St. Johns district of Portland, Oregon (Figure 2-1). The site is situated in the southwest quarter of Section 15, Township 1 South, Range 1 West. The site is bordered by the Willamette River to the south, North Burlington and North Richmond Streets to the west and east, respectively, and by North Crawford Street to the north. A Union Pacific Railroad (UPRR) rail spur runs east/west through the center of the site.

For the purposes of the PA and consistent with the past and current use of the site, the site is separated into two areas; North Area and the South Area. The North Area is located north of the railroad tracks and the South Area is located south of the railroad tracks. The North Area is currently mostly covered with buildings and pavement while the south area is vacant and covered with gravel and asphalt pavement.

The overall site area slopes down, relatively steeply north of the CSC site, from north to south with a slight slope down from east to west. A USGS Map showing the regional topography is presented in Figure 2-2. A 1998 aerial photograph is presented in Figure 2-3. Appendix A presents representative photographs of the current site conditions.

2.1 Local Utilities and Storm Water System

The site is currently served by the public utility system including water and sewer. Water lines are located in beneath Crawford Street and the UPRR rail spur. Electric power is provided from along Crawford Street. A buried, 8-inch diameter UPRR diesel pipeline is located beneath North Crawford Street west of the site and between North Burlington and Richmond Streets. The pipeline alignment then follows North Richmond Street between North Crawford Street and the UPRR rail spur. East of the site, the pipeline lies beneath the UPRR rail spur.

Storm water runoff in the CSC site area is collected in local catch basins and conveyed in the City of Portland storm sewer system. The collected storm water is conveyed to the Willamette River through the outfall located on the City of Portland property west (downriver) of the CSC site (City Outfall 50). From its construction in the early 1900s to about 1997, sewage from the overall St. Johns area was occasionally also conveyed through Outfall 50 during periods of wet weather. In approximately 1997, the sanitary sewer in the CSC site area was separated from the storm water system and sewage "overflows" are no longer discharged through the outfall.

Storm drain lines at the CSC site are located along the UPRR rail spur and along North Crawford Street. Catch basins along Crawford Street drain into the Crawford Street lines. Roof drains from the CSC buildings are connected to the line along the UPRR tracks. Two catch basins are located just north of the intersection of the UPRR tracks and North Burlington Street. These catch basins capture most of the runoff from both the CSC site and the large area up-slope (i.e. north) of the site. The buried storm drain lines flow east to west.

2.2 North Area

For the purposes of describing the current site conditions and consistent with current site use, the north area is subdivided into five subareas:

- North Richmond Street to North Charleston Street (Vacated)
- North Charleston Street (Vacated) to North John Street (Vacated)
- Columbia Forge
- TLS Steel
- Lampros Steel

The current site conditions on each of these areas are presented below.

2.2.1 North Richmond Street to North Charleston Street

This area is vacant and covered mostly with dense vegetation. This area slopes down from the northeast to the southwest. A portion of the interior of the area has been cleared and gravel fill has been placed. Lampros Steel is using the gravel-filled area for limited storage of structural steel product.

The entire area is fenced with a gate in the southeast corner of the area. No significant areas of stains or distressed vegetation were observed in this area. In summary, no evidence of releases of hazardous substances was observed in this area of the CSC site.

2.2.2 North Charleston Street to North John Street

This entire area is covered by a 200-foot by 200-foot steel building. The building is open to the west and is used by Lampros Steel to cut structural steel beams. The building has a sound concrete floor and no floor drains were observed. Lampros uses small quantities of lubricating oil in the beam saw located in this building. Lampros uses water-based cutting lubricants in the beam saw. The lubricating oil and water-based cutting oils were stored in the various locations in the building, near the cutting equipment. Oil staining was observed on the building floor beneath the cutting equipment. The oil was contained on the floor and no evidence of release to the underlying soil was observed. Lampros representatives

noted that they have always used water-based lubricants since they started operations at the site in 1989.

In summary, no evidence of releases of hazardous substances was observed in this area of the CSC site.

2.2.3 Columbia Forge

The Columbia Forge area includes a 10,000 square-foot steel building on the eastern edge of the area (Building 1) and a 20,000 square-foot concrete masonry and wood-frame building on the western edge of the area (Building 2/3). The buildings border an approximately 26,000 square-foot yard that includes covered upset forges, shear, drop forge, and induction heater areas and an oil storage shed. These buildings are shown in Figure 2-4.

Two forges set on concrete pads are located in the southern end of Building 1. The perimeter of this area is covered with a concrete floor with the area between the forge pads and the perimeter being bare ground. The floor and ground surface in this area is covered with mill scale which is oxidized metal that falls from the surface of the steel after it has been heated and is being shaped. The mill scale is a valuable product and is routinely collected from the floor and reprocessed. The forges are fueled by natural gas. The forges are cooled with water that is circulated through a water cooling-tower outside the southeast corner of the building.

The northern portion of Building 1 is used for machining and contains several large lathes. This area has a sound concrete floor with no floor drains. Water-based cutting oils were observed in this area and the CSC representatives noted that the facility had been using water-based oil since the late 1970s. Prior to that time, petroleum-based cutting oils were used. No evidence of releases was observed in the machining room.

The far northern end of Building 1 is used for offices.

Columbia Forge Building 2/3 is used primarily for storage of various metal equipment, parts, and steel stock. Steel cutting is performed in the southeastern corner of this building. Oil stains are present on the building floor. This building has a sound concrete floor and no floor drains. Two small part washers are located in this building as shown on Figure 2-4. Petroleum-based naphtha solvents have been used since Columbia Forge started operations. Chlorinated solvents have never been used at the Columbia Forge facility. Columbia Forge is a conditionally exempt hazardous waste generator due solely to the waste naphtha solvents (i.e. D001) generated in the Safety Kleen part washers.

Small quantities of oil and lubricant products were observed in this area including lubricant oil for the air compressor located just east of the building and aerosol cans of brake cleaner in the northwest portion of the building. No evidence of releases of these products was observed in these areas.

The Columbia Forge yard is an approximately 26,000 square-foot area between Building 1 and Building 2/3. The yard is paved except for the far

southwest corner. Upsetter forges and induction heaters are located in covered areas along the eastern edge of the yard. A large drop forge is located in a covered area in the southern portion of the yard. Welding operations are performed in a covered area in the southeastern portion of the yard. All forging and general operation areas are covered. Steel materials to be forged are stored throughout the yard including steel rod and pipe.

An approximately 1,000 square-foot oil storage building is located in the central portion of the yard. Lubricating oil used in the equipment on the Columbia Forge site is stored in this building. Other materials stored in this building include used oil, and two drums of Safety-Kleen naphtha solvent. Approximately forty 55-gallon drums, mostly lubricating oils, were stored in the oil storage building. The drums were placed in metal containment trays and spill kits were conspicuously located in the northeast corner building. The floor of the building was sound concrete with no floor drains. Although there was evidence of incidental drippage of oil (i.e. stains) on the building floor, rapid cleanup of the incidental drippage with absorbent material appears to have prevented any migration of the minor spills. The facility manager did not recall any spills of oil that caused impacts outside the building.

Used oil is removed from the site by a licensed oil recycler for recycling.

Two storm water drainage catch basins are located in the yard. One catch basin is located near the northeast corner of the drop forge. One catch basin is located along the western edge of the yard just north of the compressor building. Storm water runoff from the yard flows to these catch basins. From the catch basins, the water flows through buried pipes to the south boundary of the yard where the water infiltrates into the ground alongside the UPRR rail spur. CSC has installed filters within the catch basins to remove suspended particulates from the storm water runoff.

Most of the roof drains from the Columbia Forge and Lampros buildings are connected to the storm drain line located along the UPRR rail spur.

2.2.4 TLS Steel

TLS Steel leases a small (less than 2,000 square-feet) space from Columbia Forge in the northern end of Building 2/3. TLS performs light metal heating, shaping, punching, cutting, and bending using a small natural gas-fired furnace. TLS has been operating in the current location since 1989. The portion of Building 2/3 that TLS occupies is a wood frame building with a metal roof.

TLS uses small amounts of lubricating oil and cutting oil. All cutting oils are water-based. Lubricating and cutting oils are stored in various containers throughout the relatively small TLS area. Although petroleum stains are present on the TLS floor, the floor was sound concrete with no floor drains. No evidence of recent releases of hazardous substances was observed in the TLS area.

2.2.5 Lampros Steel

Lampros Steel has been operating on the CSC site since 1989. Lampros Steel distributes steel structural members (typically steel W and H sections). As part of the distribution work, Lampros also cuts and bends members to customer specifications. All cutting and bending work is performed in the building located west of the Columbia Forge area (See Section 2.2.2).

Activities performed in the Lampros area in the northwest corner of the CSC site include general storage of equipment and raw materials (steel bars and beams). Hazardous substances observed in the Lampros building included hydraulic oil (three 55-gallon drums), water-based cutting oil (two 55-gallon drums), and used oil (one 55-gallon drum). No significant stains were observed on the sound concrete floor. No floor drains were observed. The Lampros Steel office is located in the northwest corner of the Lampros building.

A 1,000-gallon, above ground diesel storage tank is located at the northern edge of the Lampros site. A steel containment box surrounds the tank. No stains were observed on the pavement surrounding the containment box. The Lampros representative was not aware of any releases or spills from the tank.

Lampros Steel is not a registered hazardous waste generator and evidence of hazardous waste generation was not observed. Used oil generated through equipment maintenance is placed in the Columbia Forge oil storage building and recycled offsite by a licensed oil recycler.

In summary, no evidence of recent releases of hazardous substances was observed in this area of the CSC site.

2.2.6 UPRR Rail Spur

Soil staining typical of rail road operations was observed along the UPRR rail spur separating the North and South Areas. The staining was consistent with petroleum hydrocarbons releases from diesel locomotives and spillage of products from the rail road cars.

2.3 South Area

The South Area of the CSC site consists of about 7 acres of open area used by Lampros Steel to store and stage structural steel beams. Most of the northern half of the area is paved with asphalt. Most of the southern half is covered with gravel. Lampros Steel representatives estimated that about 60 percent of the overall South Area is paved. No buildings are present in this area and the structural steel is stored in rows with access paths for the fork lifts and trucks in between the rows.

The entire South Area is fenced with access gates in the western and eastern ends of the area. The fence has been knocked over for an approximate 100-foot length along the southern edge of the property near

the abandoned extension of North John Street and for an approximate 50-foot length along the eastern boundary near the UPRR rail spur.

The riverbank is vegetated with blackberries and small trees. Most of the bank is covered with concrete debris and logs. Some of the concrete debris is larger than 6 feet with logs greater than 20 feet long. Smaller asphalt debris was also observed on the riverbank. Although the vegetation limited the ability to closely observe, no seeps were observed along the riverbank during the site reconnaissance. A nominal 8-inch diameter concrete pipe was observed protruding from the river bank about 200 feet east of the western boundary of the site. No evidence of recent flow from the pipe was observed (even after recent wet weather) and the pipe appeared to be associated with previous uses of the site.

In general, surface water was observed to infiltrate into the bare ground in the South Area and no evidence of direct surface water runoff to the adjacent Willamette River was observed. However, there were limited areas along the riverbank where small draws and associated surface water collection areas along the top of the bank were observed. Although these areas do not appear to drain large areas of the South Area, localized runoff collection and flow to the adjacent river could occur in these areas during heavy rainfall events.

Limited areas of black sand were observed along the top of the bank and, in some areas, along the river shoreline. The black sand appears to be different from the native soil present along the riverbank. The black sand was present in some of the small draw areas observed along the riverbank. The black sand is believed to have been imported and placed by previous property owners during the demolition of the former lumber mill buildings.

In summary, no evidence of recent releases of hazardous substances was observed in this area of the CSC site.

2.4 Adjacent North of Crawford Street Corporation Property

The area north of the CSC site is used for heavy equipment and truck storage and repair. St. Johns Truck and Equipment/Hildebrand Truck & Equipment is located immediately north (up gradient) of the CSC site, across North Crawford Street at 8435 North Crawford Street. The central portion of the site is used to store a large amount of disassembled truck parts including transmissions, wheels, tires, tanks, rear-end assemblies, and axles on unpaved ground. The property was observed from public right-of-ways during the site reconnaissance.

A heavily-stained, uncovered wash pit is present immediately adjacent to North Crawford Street, across the street from the Columbia Forge office. The approximate 15-foot by 30-foot area drains to a sump that presumably drains to the local storm water or sanitary sewer system. The concrete floor in the wash pit was heavily stained with petroleum

hydrocarbons. What appeared to be a solvent cleaning tank was also located in the wash pit. Any releases from the solvent tank would also flow directly to the drain.

Based on hazardous substance reports filed with the State Fire Marshal, St. Johns Truck and Equipment handles significant quantities of hazardous substances including waste oil, motor fuel, fuel oil, and welding gasses. St. Johns Truck and Equipment is also noted as having a sodium hydroxide cleaning tank.

The western portion of this up gradient property (across from Lampros Steel offices) is also used to store trucks. Oil stains are present on the unpaved ground where the trucks are stored. Torch cutting of disassembled truck parts is also being performed in this area.

St. Johns Marine is located north of the CSC site, along North Richmond Street. Along with boat and boat motor repair facilities, boats and boat motors are stored outside on unpaved ground.

Storm water runoff from these up gradient areas flows on to, and across the CSC site. In particular, runoff flows off of the St. Johns Truck and Equipment site and flows on to the Lampros Steel property at the west end of the CSC site, onto the Columbia Forge yard, and onto the Columbia Forge and Lampros Steel yard at North John Street. A sheen was observed on this runoff during the site visit. CSC constructed an asphalt berm along the southern edge of North Crawford Street to reduce the amount of runoff coming on to the CSC site from up gradient properties.

The runoff from the up gradient properties continues across the CSC property to the UPRR rail spur where it ponds and infiltrates. During heavy rainfall events, this runoff from the up gradient properties can flow to the west to the City of Portland catch basin at the intersection of North Burlington Street and the UPRR rail spur.

Storm water runoff also flows down North Richmond Street to the UPRR rail spur from the up gradient properties.

2.5 Adjacent East (Upriver) of Crawford Street Corporation Property

The property east (upriver) of the North Area of the CSC site consists of a residence and an auto repair shop. The shop is located in an approximately 80-foot by 30-foot building. Vehicles and small construction equipment were observed on the unpaved area around the building.

The property east (upriver) of the South Area, is presently vacant. Various debris are present on the site including concrete debris, tires, and general trash. Vegetation on this adjacent property consists of grasses, blackberries, and small trees. Recent petroleum staining was observed along the UPRR rail spur immediately east of the CSC site.

An approximate 8-inch diameter concrete pipe daylights at the river bank on the property east of the CSC site. No flow was observed coming from the pipe at the time of the site visit (after recent wet weather).

2.6 Adjacent West (Downriver) of Crawford Street Corporation Property

The property west (downriver) of the Northern Area of the CSC site is vacant and used to store steel sheets. This area is not paved.

The property west (downriver) of the Southern Area of the CSC site is the location of the City of Portland Bureau of Environmental Services (BES) laboratory. This area is mostly paved with some landscaped areas. Storm water runoff in the eastern portion of this area is directed to a small ditch and wetland area in the eastern area of the BES property. A waste pile containing asphalt debris was observed on the eastern edge of the BES property, adjacent to the CSC property. The Willamette riverbank also contains concrete and asphalt debris at the eastern edge of the BES property.

2.7 Soil and Groundwater Conditions

2.7.1 Regional and Local Geology and Hydrology

The CSC site is located along the historical flood terrace of the Willamette River. As a result, the regional geology is dominated by river deposits of varying energy underlain by the sand and gravel Troutdale formation. The Troutdale formation is about 100 feet below the ground surface. Fill has also been historically placed along the river on top of the natural river deposits. Regionally, shallow groundwater is present within the river deposits. More productive groundwater zones are present within the underlying sand and gravel Troutdale formation.

Based on soil and groundwater investigations on the southern portion of the CSC site and the properties to the east (Metro/Willamette Cove) and west (City of Portland BES Laboratory) of the CSC site, near surface soil conditions at the CSC site are anticipated to consist of fine sand, silty fine sand, and clayey silt. The depth to shallow groundwater corresponds roughly to the elevation of the Willamette River and is about 20 to 30 feet below the ground surface at the CSC site. Debris, including brick and wood was encountered in the upper 10 feet on the CSC site and on the BES property west of the CSC site. "Manmade" fill was observed to depths up to 6 feet in test pits and borings along the western end of the CSC site on the bluff above the Willamette River shoreline. The fill consisted of a black, angular sand.

2.7.2 Groundwater Use

There is no reported groundwater use on and around the CSC site. A preliminary search of the Oregon Water Resources Department did not note any groundwater supply wells within ½ mile of the CSC site. The area around the site has been serviced by the public water system since the early 1900s.

2.7.3 Hydrologic Setting

The primary surface water body in the CSC site area is the Willamette River. Other than a man-made pond constructed on the City of Portland BES property west (downriver) of the CSC site, no other significant surface waters are present in the CSC site area.

The site is located in an industrial area and much of the ground surface is paved or covered with gravel. The soil on unpaved areas consists generally of sand and silty, fine sand. The 2-year, 24-hour rainfall in the Portland area is about 2.4 inches (BES July 1999 Stormwater Management Manual). Storm water in the site area either infiltrates into the ground or is collected in catch basins and conveyed in the local storm water system.

The CSC site lies above the 100-year Willamette river flood plain. The 1996 flood did not exceed the top of the bank along the CSC site. The slope of the CSC site area is generally towards the south.

SECTION 3

SITE HISTORY

This section summarizes the site use history of the CSC site and the immediate surrounding properties. The site history is based on the review of the Sanborn Fire Insurance maps, the historical aerial photographs, and the City Directories. Some recent site use information was obtained through the interviews with CSC and CSC tenant representatives.

The overall history of the site area includes both residential and industrial use. The site's close proximity to the St. Johns neighborhood and the Willamette River has resulted in both residential and industrial land uses around the area. Land use at and adjacent to the CSC site is industrial.

The St. Johns district of Portland is one of the oldest districts in Portland with development dating back to the 1800s. The area, including the site, has been serviced by public water since the early 1900s. No wells are known to have been present on the site and historical facilities used water pumped from the Willamette River to supplement the local water supply system.

3.1 South Area

As noted in Section 2, the South Area is the portion of the site located between the UPRR railroad spur and the Willamette River. The location of the streets (existing and vacant) used to reference the subareas discussed below are shown on Figure 2-1.

Numerous large log rafts were present along the entire CSC river front, offshore of the CSC site, from the early 1900s to the mid-1970s, all prior to CSC's ownership of the property. No other significant water front activities appear to have occurred. No ship building or ship repair was performed. The limited length of river front where a dock was located (see 3.1.1 below) was used only for staging of sand and gravel.

3.1.1 North Richmond Street to North John Street

3.1.1.1 Activities Prior to CSC Ownership

The earliest available Sanborn Map (1905) shows a closed small lumber mill (Central Lumber Company) along the shore in the western portion of this subarea. The mill extends out into the river on a dock. No fuel tanks are on the map and the map notes that a sawdust-fueled electrical generator powered the mill. The mill was apparently closed in 1904 due to "litigation" and this area was generally vacant by 1911. The 1911 Sanborn map also notes a "Horse Barn" and "Wagon Shed" in this area.

A dock was constructed at end of North Richmond Street sometime between 1911 and 1924. The dock was used solely to stage sand and gravel. There is no evidence that ship building or repair was performed at, or around, the dock, or anywhere else on the site. The dock was removed between the late 1940s and 1950s.

From sometime between 1911 and 1924 to 1973, this area was used for a variety of manufacturing and warehouse activities. American Marine Iron Works (foundry and machine shop) was noted in this area on the 1924 Sanborn Map. From the early 1930s to the 1960s, this area was used by Plylock Corporation (plywood mill). The 1950 Sanborn Map shows a 20,000 SF "Woolen Mill" warehouse in the western portion of this area. The 1969 Sanborn Map shows a "Western Homes" operation on the eastern edge of this area. All of these facilities were noted as using "sawdust" for fuel and no fuel tanks are shown on the Sanborn Maps or apparent on the historical aerial photographs.

Buildings present in this area were demolished starting in the early 1970s. The City of Portland, through the Portland Development Commission, purchased the property in 1979. The last building was removed sometime between 1980 and 1984.

3.1.1.2 Activities During CSC Ownership

Manufacturing Management Incorporated (MMI) purchased this property from the City of Portland in 1988. MMI shortly thereafter transferred the site to the Crawford Street Corporation. In 1989, Lampros Steel started using this area to store structural steel.

There are no records or direct evidence of releases of hazardous substances on this portion of the CSC site during CSC's ownership.

3.1.2 North John Street to North Leavitt Street

3.1.2.1 Activities Prior to CSC Ownership

The earliest Sanborn Map (1905) shows dwellings across most of this area with a small machine shop in the southwest corner. Starting sometime between 1905 and 1911, this area was used to store lumber for the St. John's Lumber Company. This area was used solely to store lumber until the mid-1950s. An April 27, 1924 fire damaged much of the lumber storage area but the area was repaired and the lumber storage continued.

Starting in 1955 to sometime between 1973 and 1977, 12,000 square-foot building was located in the southern portion of this area. The building was associated with the Portland Lumber Company mill and was apparently used to store lumber. The building was demolished and the area was vacant from sometime between 1973 and 1977 to 1989. The City of Portland, through the Portland Development Commission, purchased the property in 1979.

3.1.2.2 Activities During CSC Ownership

MMI purchased this property from the City of Portland in 1988. MMI shortly thereafter transferred the site to the Crawford Street Corporation. In 1989, Lampros Steel started using this area to store structural steel.

There are no records or direct evidence of releases of hazardous substances on this portion of the CSC site.

3.1.3 South/Leavitt to Burlington

3.1.3.1 Activities Prior to CSC Ownership

Historical photographs obtained from the Oregon Historical Society notes this area being undeveloped, except for a few dwellings, in the late 1800s.

The earliest available Sanborn Map (1905) notes this area being used for lumber storage for St. John's Lumber Company. The 1911 Sanborn Map continues to note lumber storage with the addition of a 30,000 square-foot planing mill building and a 55,000-gallon water tower. The water tower was located at the end of the present-day, North Burlington Street and was present until 1969. The planing mill building was significantly reduced in size between 1911 and the 1930s. In the early 1950s, the planing mill was significantly expanded and was present until the mid-1970s.

An April 27, 1924 fire damaged much of the lumber storage platforms along southern edge of this area.

By 1936, a 10,000 square-foot lumber storage building was located in the northern portion of this area. This building was expanded in the early 1950s and was present until the mid-1970s.

The Sanborn Maps note that mill refuse was used for fuel at the lumber mill and no oil tanks are noted on the maps.

The 1969 Sanborn Map shows a small machine shop along the river from in the western portion of this area. The machine shop was apparently associated with the lumber mill and was removed with the other buildings on the site in the mid-1970s. By the late 1970s, the site was vacant and all buildings had been removed. The City of Portland, through the Portland Development Commission, purchased the property in 1979.

Some former and current property tenants and representatives noted that black sand material was imported to the South Area and used for surface fill when the lumber buildings were demolished. The reports of black sand fill are consistent with the black sand observed along the riverbank during the site reconnaissance (Section 2.3).

3.1.3.2 Activities During CSC Ownership

MMI purchased this property from the City of Portland in 1988. MMI shortly thereafter transferred the site to the Crawford Street Corporation. In 1989, Lampros Steel started using this area to store structural steel.

There are no records or direct evidence of releases of hazardous substances on this portion of the CSC site during CSC's ownership.

3.1.4 Previous Environmental Investigation on South Area

In 1988, prior to MMI's purchase of the South Area, MMI retained Sweet-Edwards/Emcon to perform an environmental investigation of the South Area. The investigation included the following:

- Historical review including Sanborn Fire Insurance Map review and an interview with a former onsite worker.
- Water sampling from pipes protruding from ground surface.
- Geophysical survey for subsurface features (e.g. underground storage tanks).
- Five test pits to assess subsurface features suggested from the geophysical survey.
- Removal of an underground storage tank identified from the geophysical survey and test pits.
- Sampling of black sand fill.
- Seven test pits and one soil boring to assess subsurface conditions in the area of the black sand fill.
- One soil boring exploration to assess a possible septic drain and drain field area.
- Soil and groundwater sample laboratory analysis for petroleum hydrocarbons, volatile organic compounds, PCBs, and EP Tox metals.

The study identified and assessed the following possible environmental issues on the South Area of the CSC site:

- Up to about 6 feet of black sand fill is present in the western portion of the South Area along portions of the bank above the Willamette River shoreline. Based on an interview with a former site employee, the fill was reportedly placed during the demolition of the sawmill in 1977-1978, prior to CSC's ownership of the property. The sand was reportedly spent sandblast material that had been used to clean oil tanks. The sand was oily when placed and oily water reportedly migrated briefly to the adjacent river.
- EP Tox metal concentrations in samples of the black sand did not exceed hazardous waste levels. A sample of the material was measured to contain oil and grease at a concentration of 400 mg/kg. No PCBs were detected in the samples of the material. Perched groundwater with a sheen was observed in some of the test pits in the black sand area.
- A groundwater sample from near the black sand fill area did not note any evidence of contamination according to the Sweet-Edwards/Emcon study. Soil beneath the black sand, but above the

shallow groundwater, was not stained and did not indicate evidence of contamination. The shallow groundwater was about 26 feet beneath the bottom of the fill material.

- Soil and groundwater samples collected from the test pits and the soil boring in the area of the former septic tank and drain field did not note any evidence of contamination.
- The underground storage tank identified from the geophysical survey and test pit explorations was located in the southeastern portion of the South Area. A sample of the contents of the tank was found to be diesel. The tank was removed and properly disposed offsite. No field evidence of contamination was observed during the tank removal. Two soil samples collected from the bottom of the tank excavation and a third sample from the fill port area were analyzed for oil and grease. Oil and grease was detected in the bottom soil samples at concentrations of 100 mg/kg and 200 mg/kg. Oil and grease was detected in the soil sample from the fill port area at a concentration of 100 mg/kg.
- A reconnaissance of the river bluff did not note any groundwater seeps in the exposed bank.

3.2 North Area

As noted in Section 2, the North Area is the portion of the site located between the UPRR railroad spur and North Crawford Street. The location of the streets used to reference the subareas discussed below are shown on Figure 2-1.

3.2.1 North Richmond Street to North Charleston Street

3.2.1.1 Activities Prior to CSC Ownership

The earliest available Sanborn Map (1905) shows only a few dwellings and a small machine shop in this area.

By 1911, a 9,000 square-foot machine shop was located in this area. The foundry in the machine shop was fueled by coal. Two dwellings are also noted in this area on the 1911 Sanborn Map. The 9,000 square-foot building is vacant and only the dwellings remain in the 1924 Sanborn Map.

From the mid 1930s to 1948, this area was used for lumber storage. The site was no longer used for lumber storage from about 1950 to the early 1970s when logs were stored in this area.

The building was removed in 1973 and by 1977, the site was not used and was vacant with vegetation.

3.2.1.2 Activities During CSC Ownership

MMI purchased this property from the City of Portland Development Commission in 1988. MMI shortly thereafter transferred the site to the Crawford Street Corporation. In the mid-1990s, Lampros Steel started using the middle of this area to store structural steel.

There are no records or direct evidence of releases of hazardous substances on this portion of the CSC site.

3.2.2 North Charleston Street to North John Street

3.2.2.1 Activities Prior to CSC Ownership

From before 1905 to the mid-1930s, only dwellings were present in this area. Starting in the mid-1930s to the mid-1940s, this area was used to store lumber. The 1950 Sanborn Map shows a small auto repair shop (noted in the City Directory as Love Fuel Company) and a single dwelling on this area. No fuel tanks are shown to be associated with this facility.

Sometime between 1957 and 1960, a 200-foot by 200-foot building was constructed, covering almost this entire area. The 1969 Sanborn Map notes the building being used by Portland Manufacturing Company to store lumber.

The City of Portland Development Commission (PDC) acquired the property in the 1970s. While the PDC owned the property, the City of Portland used the building for general maintenance operations.

3.2.2.2 Activities During CSC Ownership

MMI purchased this property from the City of Portland Development Commission in 1988. MMI file information notes that there was a drum of Silvex in the PDC building when the building was purchased by MMI in 1988.

This building is currently present on the site and has been used by Lampros Steel since 1989. Shortly after purchasing the property, MMI transferred the site to the Crawford Street Corporation.

There are no records or direct evidence of releases of hazardous substances on this portion of the CSC site.

3.2.3 North John Street to North Leavitt Street

The earliest available Sanborn Map (1905) shows this area vacant. This area remains vacant except for periodic use for storage of plywood and lumber mill wood waste, until the mid-1950s when a 1,700 square-foot "Pattern Shop" is constructed in the northern portion of this area. The pattern shop is noted as "Peninsula Pattern Works" in the 1960 through 1970 City directories.

By 1961, the use of the western area of site, including "Pattern Shop" appeared to be associated with Skookum Logging Equipment, located to the west of this area. The use of the eastern portion of this area was associated with the 200-foot by 200-foot building located to the east.

Columbia Forge moved into the Pattern Shop building in 1971. The building is expanded in 1972 to what is currently the Columbia Forge office and Building 1. The current oil storage building was also constructed in 1972.

CSC files indicate that two underground storage tanks (USTs) were formerly present in this portion of the CSC site. Both tanks were removed in 1987. The approximate former locations of the tanks are shown on Figure 2-4.

One tank was located near the southern portion of the area in the "weld shop." This tank was a 1,000-gallon steel tank and was installed in the late 1960s. The tank was used to store Bunker C oil. A second tank was located along the northern edge of the site and was referred to as the "Yard" tank. This tank was a 1,000-gallon steel tank and was installed in the mid-1950s. This tank was used to store gasoline.

Soil samples were collected from the tank excavations and analyzed for petroleum hydrocarbons when the tanks were removed. The sample from the "Yard" UST was also analyzed for total lead and EP Toxicity lead. Diesel was not detected in either of the soil samples and gasoline petroleum hydrocarbons were detected only in the sample from the Yard UST excavation at a concentration of 16 mg/kg. The measured total lead concentration in the soil sample from the Yard UST was in the range of typical background concentrations and lead was not detected in the EP toxicity analysis. The laboratory report for the soil chemical analyses is presented in Appendix B.

A very small quantity (2 to 3 ounces) of PCB-containing oil was spilled inside an electrical induction heater cabinet in May 1987. The entire cabinet was removed from the site and disposed properly by General Electric. No PCB oil was released outside the cabinet and no PCBs were released to the ground. There is no potential for the contained spill of PCB oil to have caused an impact to the Willamette River water or sediments.

In 1997, BES collected a storm water sample from the western drain pipe outlet from the Columbia Forge yard area (see Section 2.2.3 and Figure 2-4). The sample was analyzed for metals. Low concentrations of copper (10 µg/L), selenium (47 µg/L), and zinc (65 µg/L) were detected in the sample. Lead, cadmium, and chromium were not detected in the storm water sample.

3.2.4 North Leavitt Street to North Burlington Street

The earliest available Sanborn Map (1905) notes five dwellings on this area of the site. The dwellings are also present on the 1911 map along with a building labeled "Portland Collapsible Box" on the southeast corner

of the site. A "Lauther's Mercantile Warehouse" is also shown on the southwest corner of this area on the 1911 Sanborn Map.

By 1924, Skookum Logging Equipment Company began operations on this area of the site except for the northwest corner of the area where three dwellings were located. The Skookum operations included a machine shop in the southeast corner and a coal bin in the southern portion of the area. The Skookum facility also included a brass foundry in the northern portion of the site. Warehouses used to store hay and wire cable were noted in the southwest portion of this area in the 1924 Sanborn Map.

The foundry was expanded sometime between 1924 and 1936 and 1940 when the last remaining dwellings in this area were removed. The warehouses in the southwest portion of this area were removed in the late 1940s.

By 1950 Skookum Logging Equipment occupied the entire eastern half of this area. The Skookum operations had been expanded to include a foundry with two furnaces, a hammer forge, and a machine shop in the southeast corner.

The 1950 Sanborn Map shows Portland Chain Manufacturing Company occupying the western half of this area. The Portland Chain Manufacturing Company was mostly an open yard with five forge furnaces. A 3,500 square-foot building was located in the northwest corner of this area.

The buildings on the eastern half of this area were expanded in the period 1950 to 1955 such that the entire eastern half of this area was covered. Between 1963 and 1964, the building currently existing on the western portion of this area was constructed.

CSC files indicate that an UST was formerly present in this portion of the CSC site. The UST was removed in 1987. The approximate former location of the tank is shown on Figure 2-4. This tank was a 5,000-gallon steel tank and was used to store diesel. It is not clear when the tank was installed but it appears to have been installed before 1960. A soil sample was collected from the tank excavation and analyzed for petroleum hydrocarbons when the tank was removed. Gasoline or diesel was not detected in the soil sample. The laboratory report for the soil chemical analyses is presented in Appendix B.

3.2.5 Previous Environmental Investigation on North Area

The environmental investigation performed by Sweet-Edwards/Emcon in 1988 and described in Section 3.1.4 also included a historical review and site reconnaissance of the North Area. No soil or groundwater samples were collected in the North Area as part of the 1988 investigation.

The 1988 historical review and site reconnaissance noted the following:

- An 8-inch, buried, Union Pacific Railroad diesel pipeline is present beneath North Crawford Street.

- Three underground storage tanks had been previously located on the Columbia Forge and Lampros Steel areas. The tanks were removed in 1987. Petroleum hydrocarbons were detected at a concentration of 16 mg/kg in one sample. Petroleum hydrocarbons were not detected in the other two soil samples.
- Oily runoff of storm water occurs from the Columbia Forge and Lampros Steel areas. The runoff pools along the UPRR rail road spur along the southern edge of the Columbia Forge and Lampros Steel areas.
- A fuel pump island and, presumably, an underground storage tank are present on the St. Johns Truck and Equipment property north of North Crawford Street. An outside steam cleaning area with a drain was also observed on the St. Johns Truck and Equipment property.

The Sweet-Edwards/Emcon report did not recognize the flow of storm water onto and across the CSC site from the properties upgradient (i.e. north) of the CSC site.

3.3 Adjacent North of Crawford Street Corporation Property

From before the earliest Sanborn Map available (1905) to the mid 1950s, the area north of the CSC site was mostly vacant with a few dwellings. Starting in the 1920's, the far west end was also used for lumber storage.

In the early 1960s, a building was constructed along the north side of North Crawford Street, between North John and Leavitt Streets. The building was used initially for a fuel business (St. Johns Fuel Company) and then for truck repair (Hildebrand Truck and Equipment starting between 1970 and 1975). The truck repair shop is still operated on this area north of the site. Since its construction, more and more debris, equipment, and trucks have been placed around the truck repair building.

The property between North Burlington and Leavitt Streets was used for lumber storage up to the late 1960s. From that time to the present, this area has been used for auto and truck parking.

By 1991, a large amount of debris, equipment, and trucks in varying degrees of disassembly were present on almost all of the properties north of the CSC site. As discussed in other sections of this PA report, storm water runoff from these areas flows to, and across, the CSC site. Sheens have been observed on this runoff coming from the properties north of the CSC site.

A fuel pump was present on the St. Johns Truck and Equipment site in the late 1980s. Such a pump would have most likely been associated with underground storage tanks. DEQ has no records of USTs on the St. Johns Truck and Equipment site. However, City of Portland Fire Bureau records note a 2,000-gallon diesel tank and two 8,000-gallon gasoline tanks being installed on the St. Johns Truck and Equipment site. No files

were found at DEQ or the Fire Bureau indicating that the tanks have been removed.

3.4 Adjacent East (Upriver) of Crawford Street Corporation Property

3.4.1 General History

The earliest available Sanborn Map for this area (1911) shows a dock along the river front, east of the CSC site. By 1924, the area east (upriver) of the CSC site was the site of a large plywood mill. The plywood mill was present in this area through the late 1960s. From no later than 1950 to its closure, the mill was operated by Plylock.

The several Sanborn Maps covering this area over this period note glue storage areas. Phenol-based glue was a typical industrial product used at similar operations. The glue was presumably used to attach the wood veneers to form the plywood. Other hazardous substances typically associated with plywood mills include petroleum hydrocarbons from lubricating oils.

By the later 1960s, the plywood mill was abandoned and only a small cabinet shop remained operating in the area east (up river) of the CSC site. The plywood mill buildings and the dock along the river front were demolished in 1971 and 1972. By 1973, the area east of the CSC site was vacant with bare ground.

The property east of the CSC site is currently owned by the Metropolitan Regional Center (Metro) who recently purchased the site from the City of Portland.

3.4.2 Previous Environmental Investigation on Property East (Upriver) of Crawford Street Site

In 1988 and 1989, Sweet-Edwards/Emcon was retained by Grayco Resources to perform a Level I environmental site assessment and field investigation of the property east (up river) of the CSC site and south of the UPRR rail tracks. The investigation consisted of an historical review, a site reconnaissance, geophysical survey, 13 test pits, four hand auger borings, and 19 soil borings. Chemical analysis was performed on 25 soil samples and 22 groundwater samples. PCBs were detected in groundwater samples from soil borings on the western end of the investigation area, near the east end of the CSC site.

In 1994, the City of Portland retained Century West Engineering Corporation to perform a Phase I and Phase II environmental site assessment of the property east of the CSC site, north of UPRR rail tracks, and south of vacated North Bradford Street. The investigation consisted of an historical review, a site reconnaissance, and excavation of 12 test pits. No soil or groundwater samples were collected for

chemical analysis from the test pits. The investigation did not note any evidence of contamination on the site.

In 1995 Emcon was retained by Metro to perform additional soil, groundwater, and sediment sampling on the property east of the CSC site and south of the UPRR rail tracks. Soil samples were collected from a series of soil borings and groundwater monitoring wells. Samples from the western end of the site (near the east end of the CSC property), noted PAHs in soil, groundwater, and sediment.

3.5 Adjacent West (Downriver) of Crawford Street Corporation Property

3.5.1 General Site History

The earliest available Sanborn Map for this area (1911) shows a dock along the river front, west of the CSC site. By 1911, the area west (downriver) of the CSC site was the site of a large lumber mill. The lumber mill operations included a large dock. The major operations of the lumber mill were present on this area through the mid-1950s. From the mid-1950s to its closure in the mid-1970s, this area was used for lumber storage and mill refuse management. The dock was present and used from the early 1900s to when the mill was demolished in the late 1970s.

The mill was operated by St. Johns Lumber until between the late 1920s and the early 1930s. From this period to its closure in the mid-1970s, the mill was operated by Portland Lumber Mills. The mill produced wooden boxes.

The mill operations included mill refuse handling and burning. Lumber mill operations also typically include use of lubricants and oils.

The property west of the CSC site was purchased by the City of Portland Development Commission (i.e. City of Portland) in the late 1970s when the former lumber mill and box manufacturer ceased operations on the site.

3.5.2 Previous Environmental Investigation on Property West of Crawford Street Site

In 1988, CSC considered purchasing the property west (downriver) of the CSC site from the City of Portland Development Commission (PDC). As part of their consideration of the property, CSC retained Sweet-Edwards/Emcon to assess potential soil and groundwater contamination issues on the property. The investigation noted several soil and groundwater contamination issues on the PDC property including:

- Over 500 cubic yards of black fill material containing petroleum hydrocarbons and halogenated organic compounds in the western portion of the property.

- Uncontrolled fill containing demolition waste and trash in the southern portion of the property.
- Halogenated organic compounds and 2,4-dichlorophenol in shallow groundwater at the site.

The file information also indicates that underground storage tanks associated with the former lumber mill were formerly present immediately north (upgradient) of the City of Portland property.

In 1994, the City of Portland Bureau of Environmental Services (BES) retained RZA Agra to perform an environmental site investigation at the property west of the CSC South Area property. The investigation included:

- Site history review
- Twenty test pit excavations
- Drilling and construction of five groundwater monitoring wells
- Five test trenches

Samples of black sand material encountered in the test trenches were measured to have petroleum hydrocarbon concentrations up to 667 mg/kg. About 2,113 cubic yards of black sand material was removed from the site based on visual criteria. Pentachlorophenol was detected in a groundwater sample from a well in the southeastern corner of the site at a concentration of 18 µg/L.

In October 1994, a drilling contractor penetrated an abandoned electrical conduit filled with PCB insulating oil on the eastern portion of the City of Portland property. A series of test pits were performed and about 150 cubic yards of PCB contaminated soil was excavated. Five of the 15 confirmation soil samples collected from the excavation after the soil excavation was completed had PCB concentrations greater than 1 mg/kg.

SECTION 4

ASSESSMENT OF POTENTIAL SOURCES AND PORTLAND HARBOR PATHWAYS OF EXPOSURE

This section presents the assessment of potential contaminant sources on the CSC site, the potential contaminant migration pathways from the CSC site sources to the Willamette River, and the potential receptors associated with the Willamette River.

The sources and pathways were identified based on the recent site conditions and operations. The following potential sources and migration pathways were identified and assessed:

- Former underground storage tanks
- Storm water runoff from Columbia Forge

For the purposes of this PA, only those on-site sources and migration pathways possibly occurring during CSC ownership of the site and as a result of operations performed by CSC are considered. In particular, only operations and possible releases occurring after 1988 on the entire South Area and the eastern 500 feet of the North Area were considered in this PA. CSC's predecessor-in-interest did not own the western portion of the North Area until the 1930s.

Only those potential sources and migration pathways associated with contaminants identified by DEQ as COIs in the Willamette River sediments are included in the assessment.

4.1 Possible Willamette River Receptors

The potential exposure receptors associated with the Willamette River are presented in the DEQ Site Strategy Recommendation. These receptors include:

- Persons participating in recreational boating, swimming, and beach use.
- Persons participating in recreational and subsistence fishing.
- Habitat and migration pathway for fish including Chinook salmon and steelhead, which are listed as threatened species under the Federal Endangered Species Act.
- Benthic community in the river sediments
- Habitat for birds and wildlife.

The potential contaminant sources and migration pathways discussed in this section are those that could possibly impact the above potential Willamette River receptors as presented by DEQ in the site strategy recommendation.

4.2 Underground Storage Tanks

Three underground storage tanks were previously located on the CSC site. Table 4-1 summarizes the tank characteristics and locations.

Table 4-1
Former Underground Storage Tanks on CSC Site
Crawford Street Corporation Site PA

Name/ Reference	Location	Size (gal)	Contents	Date Installed
Weld Shop	Outside the southwest corner of Building 1 in southeast corner of the Columbia Forge yard.	1,000	Bunker C oil	1950s
Skookum	Northern edge of the Lampros Steel property at the western end of the CSC site.	5,000	Diesel	Prior to 1960
Yard	Northern edge of the CSC site in the Columbia Forge yard	1,000	Gasoline	Late 1960s

All of these USTs were removed in 1987. Soil samples were collected from the excavation of each tank and analyzed for petroleum hydrocarbons. As noted in Sections 3.2.3 and 3.2.4, petroleum hydrocarbons were not detected in two of the samples and were detected at a concentration of 16 mg/kg in the third sample (from the Yard UST excavation).

Based on the lack of petroleum hydrocarbons in the soil samples from each of the three UST excavations, no releases of petroleum hydrocarbons occurred from the USTs. Therefore, there is no potential for the USTs to have caused an impact to the Willamette River water or sediments. No further assessment of the USTs as possible sources is necessary.

4.3 Storm Water Runoff and Infiltration from Columbia Forge

As noted in Section 2.2.3, storm water runoff from the Columbia Forge yard is collected in catch basins and conveyed to the area along the UPRR rail spur where it infiltrates into the ground. Particulate contaminants from the Columbia Forge site conveyed in the storm water runoff would be deposited in the surface soil as the storm water infiltrated

into the soil. Because of the relative low solubility of the possible contaminants associated with the Columbia Forge site, runoff contaminants would likely consist of contaminated particulates rather than dissolved contaminants.

The area along the UPRR tracks collects stormwater runoff from the entire hillside north of the Crawford Street site. During heavy rainfall, including during the site visit for this PA, storm water runoff flows from the properties to the north of the Crawford Street site, across Crawford Street, and onto the Crawford Street property. Significant sheet flow was observed particularly from the abandoned North John Street area into, and across, the Columbia Forge and Lampros Steel storage yard. As noted in Section 2.4, debris, heavy equipment, and disassembled trucks are, and have been, present on these properties and runoff from these properties likely contains petroleum hydrocarbons and metals. Significant surface water runoff also flows down North Richmond Street and North Burlington Street to the UPRR rail spur.

CSC constructed a 200-foot long asphalt berm along the southern edge of Crawford Street yard to reduce the runoff from the upslope sites entering the CSC property. Prior to CSC's construction of the berm, offsite stormwater runoff flowed freely across the Columbia Forge yard and into the yard catch basins.

4.3.1 Possible Surface Water Migration Pathway

During long periods of heavy rainfall, ponded water along the northern edge of the UPRR tracks may eventually drain into the City of Portland storm water catch basin on North Burlington Street. The City of Portland catch basin is connected to the local combined storm water system, which discharges to the Willamette River at Outfall 50 on the City of Portland property west of the CSC site. Because this ponded water may include runoff from the Columbia Forge yard (along with runoff from the properties north of the CSC site), there is some potential for storm water runoff from the Columbia Forge yard to flow to the Willamette River. CSC Contaminants of Interest (COIs) present in the stormwater runoff (if any) could possibly, therefore, migrate to the Willamette River.

4.3.2 Possible Groundwater Migration Pathway

There is a slight potential that dissolved contaminants in the infiltrating stormwater (if present) could migrate down through the vadose zone and eventually impact the underlying shallow groundwater. The shallow groundwater is expected to flow toward the Willamette River and eventually discharge into the river.

The storm water is expected to have, at the most, only modest contaminant concentrations of relatively insoluble COIs and the depth to shallow groundwater is 20 to 30 feet. Therefore, the potential for groundwater to have been impacted by stormwater runoff and for the groundwater impacts to extend to the Willamette River is small. Such groundwater impacts to the Willamette River from the CSC site, if they

exist, would be indicated by high COI concentrations in the near surface soil near where the runoff from the Columbia Forge yard infiltrates.

4.3.3 Possible Air Migration Pathway

Once COIs, if present, are deposited in the surface soil from infiltrating stormwater, there is some theoretical potential for the contaminants to migrate through the air to the Willamette River. In particular, soil particulates with absorbed COIs could become wind born and migrate to the river with blowing dust. The potential for such impacts to the Willamette River through the air, would be indicated by high COI concentrations in the near surface soil near where the runoff from the Columbia Forge yard infiltrates.

Given the very high dispersion of the contaminated soil particulates that would occur in the air and river, contaminant concentrations in the surface soil would have to be very high before air migration of contaminants could possibly, materially affect the Willamette River sediment.

SAMPLING AND ANALYSIS OF SOURCE/PATHWAYS OF CONCERN TO PORTLAND HARBOR

This section presents the sampling and analysis program that will be performed at the Crawford Street site as part of the PA. The purpose of the sampling and analysis will be to assess whether releases of Contaminants of Interest (COIs) have occurred from potential source(s) and whether released COIs have migrated through the identified potential pathways to the Willamette River. Potential source(s) that require further assessment are discussed in Section 4.

5.1 Contaminants of Interest

A sediment sample collected by the U.S. Environmental Protection Agency (EPA) in 1997 from offshore of the CSC site was determined by DEQ to contain elevated concentrations of a few hazardous substances. DEQ determined the hazardous substances to be "elevated" based on their concentrations relative to "baseline" concentrations elsewhere in the Portland Harbor. Using this approach, DEQ identified the following as Contaminants of Interest (COIs) for the CSC site:

- Arsenic
- Lead
- Mercury
- Di-n-butylphthalate
- Low molecular weight polynuclear aromatic hydrocarbons (LPAHs)
- High molecular weight polynuclear aromatic hydrocarbons (HPAHs)
- Organotins

The DEQ Environmental Cleanup Site Information (ECSI) Site Summary Report for the CSC site notes that "Mercury and PAH sediment contamination appears (sic) contribution from upstream sources."

There have been no activities on the CSC site associated with organotins. No ship repair or shop painting work has been performed on the CSC site. Over water activities, off of the CSC site, by previous owners was limited to loading of sand and gravel barges at the far eastern end of the site from early 1900s to the late 1940s. Therefore, there is no potential for releases of organotins to have occurred on the CSC site and organotins are not considered a COI at the CSC site.

It is doubtful whether arsenic is actually a COI for the CSC site. The measured arsenic concentration in the sediments offshore of the CSC site (5 mg/kg) is well within typical natural background concentration in the Portland area and only 1 mg/kg greater than the "baseline" concentration established by DEQ. The method detection limit for the arsenic analyses in the EPA study often exceeded the DEQ baseline concentration. Furthermore, arsenic concentrations in suspended sediment entering the Portland Harbor from upstream sources is in the range of 5 to 10 mg/kg. Therefore, the arsenic concentrations in the sediment offshore from the CSC site are not indicative an upland source of arsenic on the CSC site.

5.2 Source/Pathways of Concern

As noted in Section 4.3, there is a potential for COIs to be released from the Columbia Forge yard to the surface soil and possibly migrate through periodic surface water flow to the local storm water system. There is also a small potential for the surface water COIs, if present, to impact the underlying shallow groundwater. Given the non-volatile nature of the COIs, volatilization of the COIs is not expected to be a significant migration pathway.

The relative concentrations of COIs in the surface soil in the area where the Columbia Forge surface runoff infiltrates into the ground would be indicative of the potential for the surface water or groundwater pathways to be significant COI migration pathways. If significantly elevated concentrations of COIs (relative to the upgradient and background concentrations) are not present in the surface soil, elevated concentrations of COIs would not be expected in the surface water runoff or shallow groundwater.

Runoff from the Columbia Forge yard is commingled with storm water runoff from the uphill properties to the north and from runoff from along the UPRR tracks east of the site (the ground slope along the UPRR tracks slopes gently down east to west). Past and current activities on these properties have likely resulted in releases of petroleum hydrocarbons and other COIs to the surface water runoff from the properties. Sampling of surface soil down gradient of the Columbia Forge yard to assess the potential for releases from the yard must also consider the likely sources of COIs up gradient from the Columbia Forge property.

5.3 Proposed Sampling Program

This section describes the specific PA sampling and analysis program that will be performed to assess whether COIs have been released from the Columbia Forge yard to the surface soil and possibly migrated to the Willamette River through the surface water, groundwater, and air pathways.

5.3.1 General Scope of Sampling Program

The PA sampling and analysis program will consist of collecting surface soil samples from six locations along the UPRR rail spur and analyzing the soil samples for the COIs identified by DEQ. Figure 5-1 shows the proposed PA sampling locations. Table 5-1 summarizes the proposed locations and their rationale.

Table 5-1
Proposed PA Surface Soil Sample Locations
Crawford Street Corporation Site PA

Sample	Location	Rationale
SS-1	50 feet west of Richmond Street, along north side of UPRR rail spur.	Assess background soil concentrations along UPRR rail spur
SS-2	At foot of Richmond Street, along north side of UPRR rail spur.	Assess impacts from offsite runoff down Richmond Street.
SS-3	Between southern exit from the Columbia Forge/Lampros Steel yard and the UPRR rail spur.	Assess impacts from offsite runoff onto and through the paved yard.
SS-4	Between outlet drain from catch basin near drop forge and UPRR rail spur.	Area of infiltration for Columbia Forge yard runoff. Assess impacts from Columbia Forge yard runoff
SS-5	Between outlet drain from catch basin at eastern entrance to Building 2/3 and UPRR rail spur.	Area of infiltration for Columbia Forge yard runoff. Assess impacts from Columbia Forge yard runoff
SS-6	At foot of North Burlington Street, along north side of UPRR rail spur.	Assess impacts from offsite runoff down North Burlington Street.

Surface soil contamination is expected to be the most indicative of possible releases to the soil from surface water runoff. Therefore, the soil samples will be collected from the upper 6-inches of the ground surface at the proposed locations shown in Figure 5-1 and described in Table 5-1.

5.3.2 Sampling Procedures

Each surface soil sample will consist of five subsamples composited into a single sample. The subsamples will be collected in a 5-point dice pattern across an approximately 5-foot by 5-foot area at each sample location. The composite soil sampling will provide a more representative assessment of the surface soil contaminant concentrations at each sample location.

Each sample will be collected using the following procedure:

- Scrape away surface vegetation, if present, at each subsample location.

- Excavate a minimum 6-inch deep hole with a clean shovel at each subsample location. If necessary, a clean pick will be used to penetrate the surface.
- After the hole is excavated, collect the soil sample across the upper 6-inches of the sidewall of the hole with a clean trowel or spoon. Exclude large gravel or organic debris from the sample.
- Place the subsample in the laboratory-supplied glass container. Fill the container about 1/5 with each subsample. Instruct the analytical laboratory to thoroughly mix the sample before collecting the aliquot for analysis.
- Place the filled sample container in a chilled cooler for transport to the analytical laboratory.

The samples will be collected and transported using proper chain-of-custody procedures. Field notes will be maintained noting the general soil conditions and any unusual or unanticipated conditions.

5.3.3 Analytical Laboratory Analysis

Each soil sample will be analyzed for the CSC site COIs using the following methods:

- PAHs by EPA Method 8310 or 8270 SIM
- Di-N-butylphthalate by EPA Method 8270
- Lead by EPA Method 3050/6010
- Mercury by EPA Method 7471

A QA/QC review of the laboratory data will be performed once the data is received from the analytical laboratory. This review will include the following:

- Chain-of-custody complete and correct
- Analysis within holding times
- Chemicals of interest in method blanks
- Blank spike recoveries within accuracy control limits
- Blank spike duplicate results within analytical precision control limits
- Surrogate recoveries within accuracy control limits
- Matrix spike recoveries within accuracy control limits
- Matrix spike duplicate results within analytical precision control limits
- Detection limits sufficiently low

On the basis of the results of the QA/QC data review, the data will be flagged according to standard EPA procedures. Questionable data will

be flagged with a "J" and considered an estimated value. Data unacceptable for its intended use will be rejected and flagged with an "R."

5.3.4 Reporting

The results of the PA sampling will be presented in a report once the results of the chemical analysis are received from the laboratory. The report will include the following:

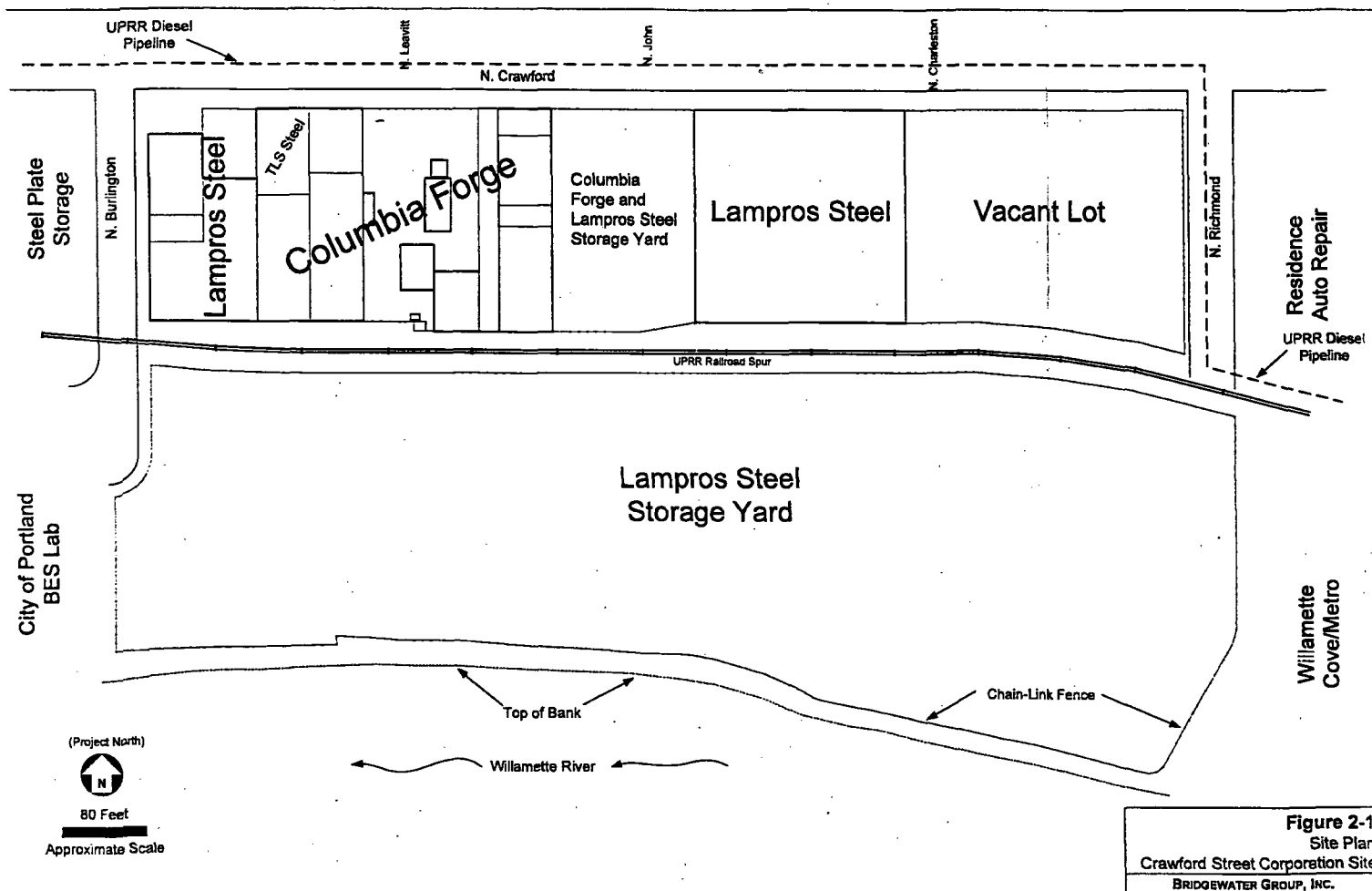
- Table showing the results of the chemical analysis.
- Figure showing where the samples were collected.
- Description of the soil and general site conditions in the area where the samples were collected.
- Discussion of any unanticipated or unusual conditions encountered while collecting the soil samples.
- Copy of the analytical laboratory report.

The report will also include a brief assessment of the potential for releases and migration of hazardous substances based on the results of the PA sampling.

The PA sampling results will be analyzed by comparing the relative COI concentrations in the soil samples from along the UPRR rail spur. In particular, if the COI concentrations in the surface soil samples from where the Columbia Forge storm water runoff infiltrates are greater than the COI concentrations in the other surface soil samples, additional sampling will be performed. Additional sampling will likely include surface water samples collected during rainfall events at the surface soil sample locations and groundwater samples collected at the down gradient edge of the CSC site.

A detailed sampling and analysis plan for any necessary additional sampling, including specific sample types and locations, will be prepared as part of the PA sampling report.

FIGURES



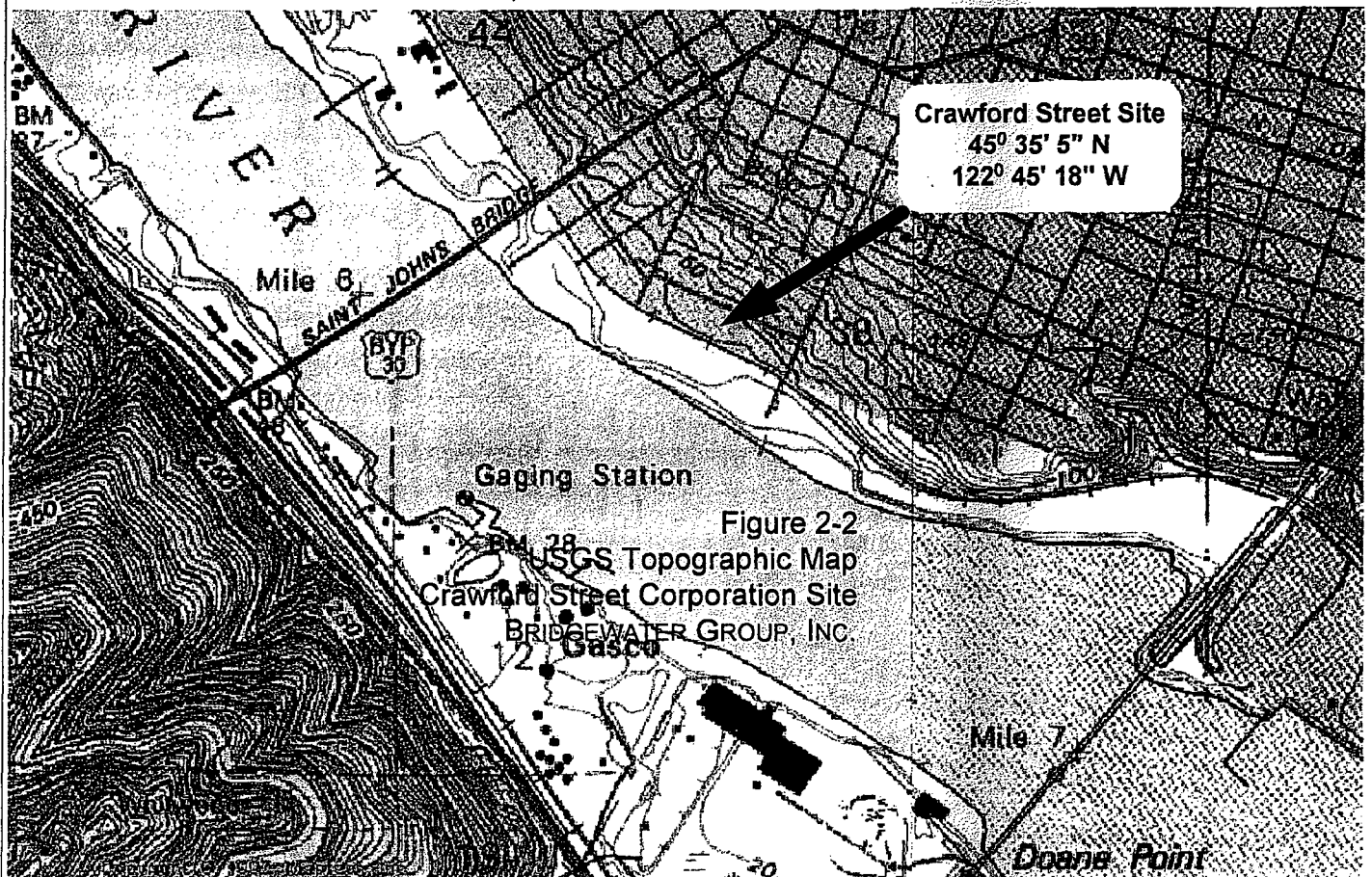
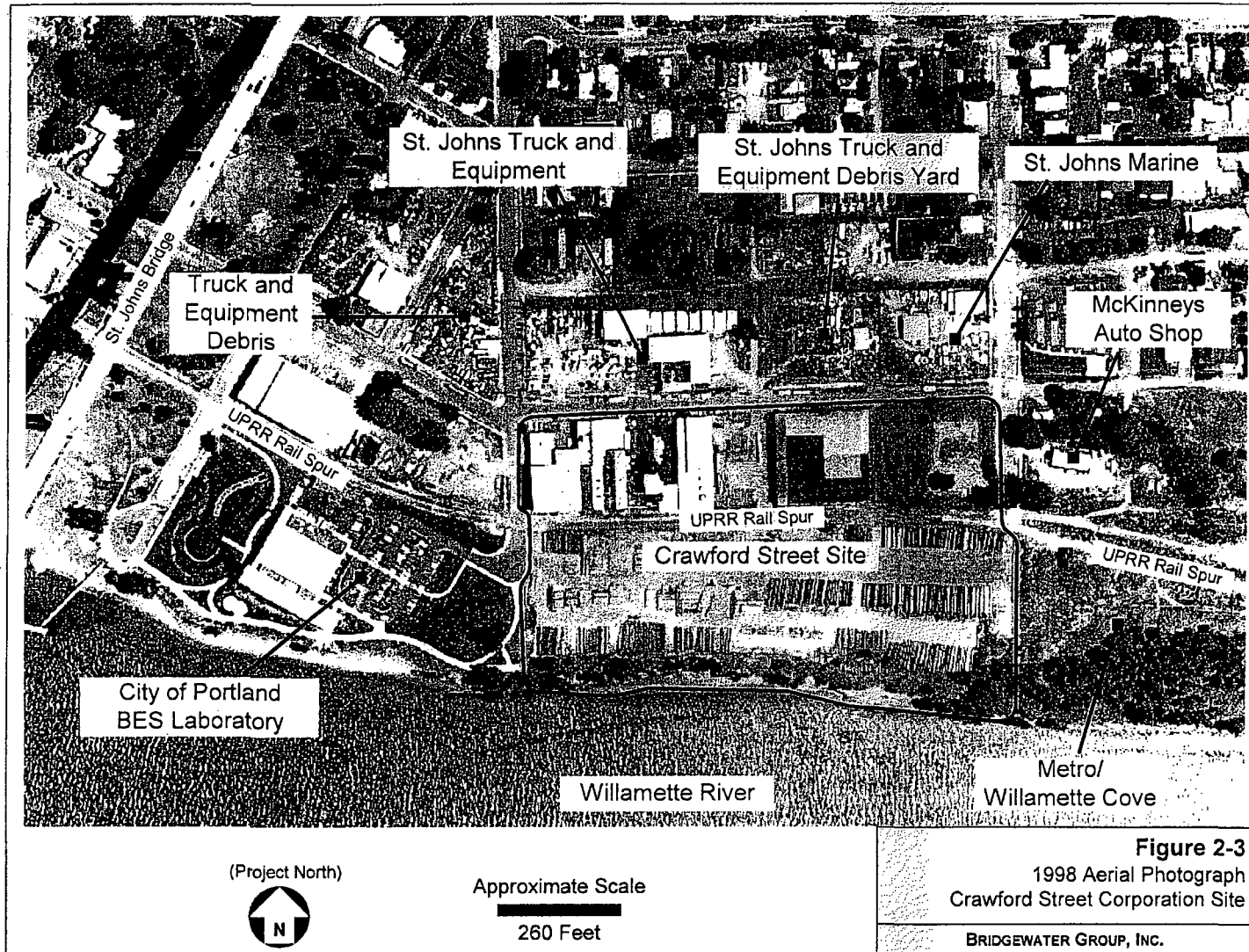


Figure from USGS
Topographic Map Linnton
and Portland Quadrangles
Photorevised 1990

Approximate Scale
833 feet

Figure 2-2
USGS Topographic Map
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.



CRAW00014406

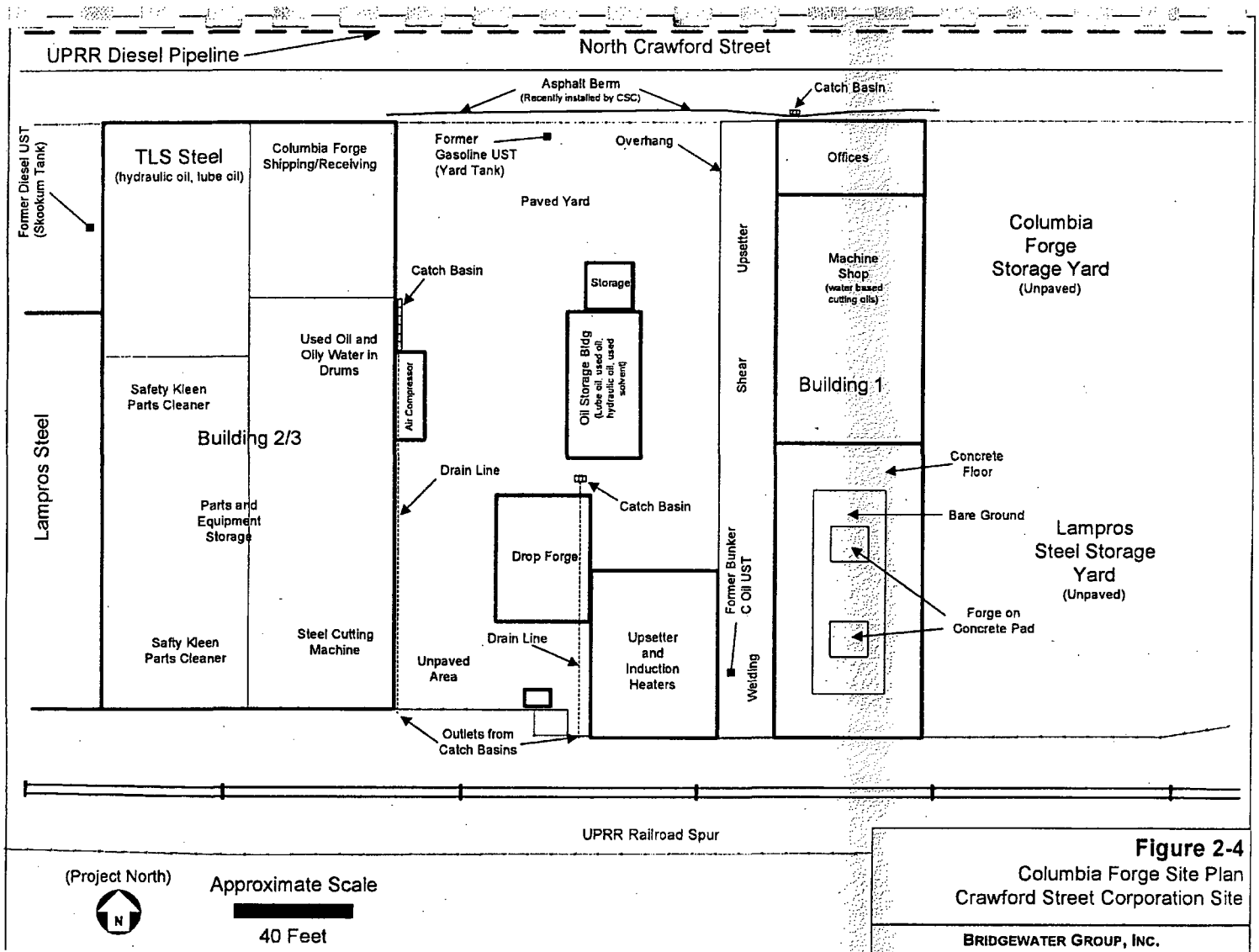
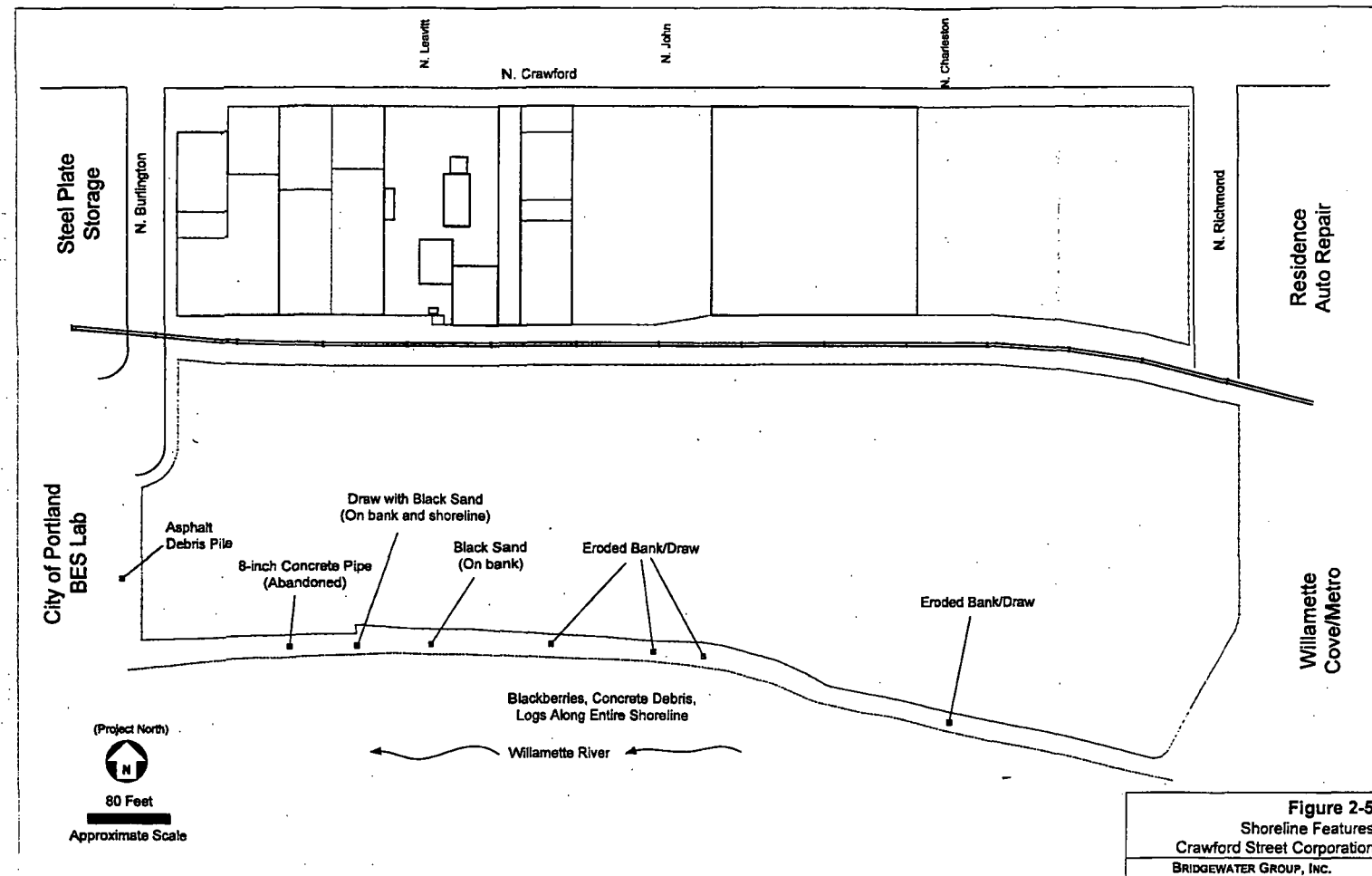
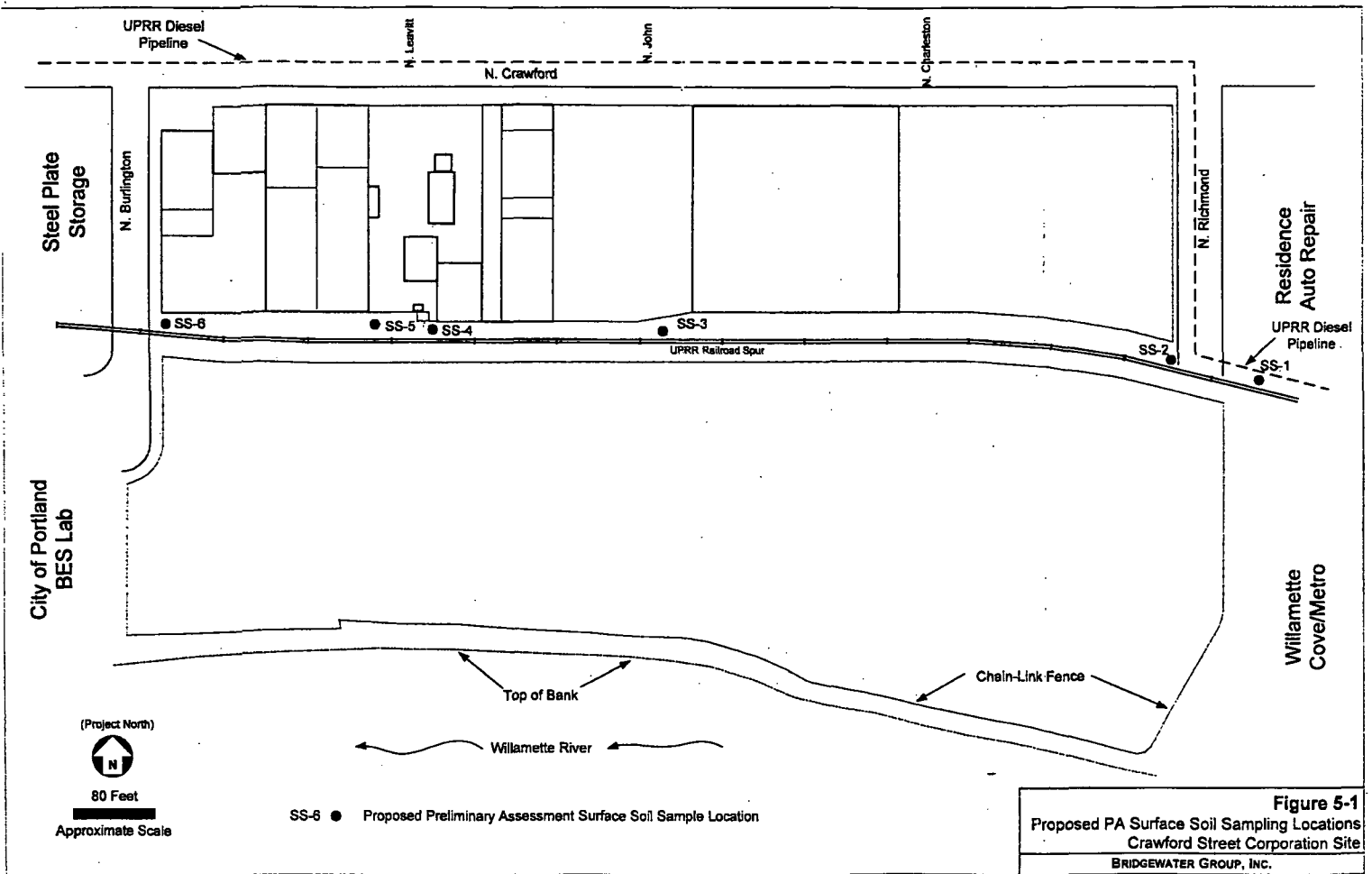


Figure 2-4
Columbia Forge Site Plan
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

CRAW00014407





APPENDIX A

4

CRAW00014410

APPENDIX A

**PHOTOGRAPHS OF CURRENT SITE
CONDITIONS**

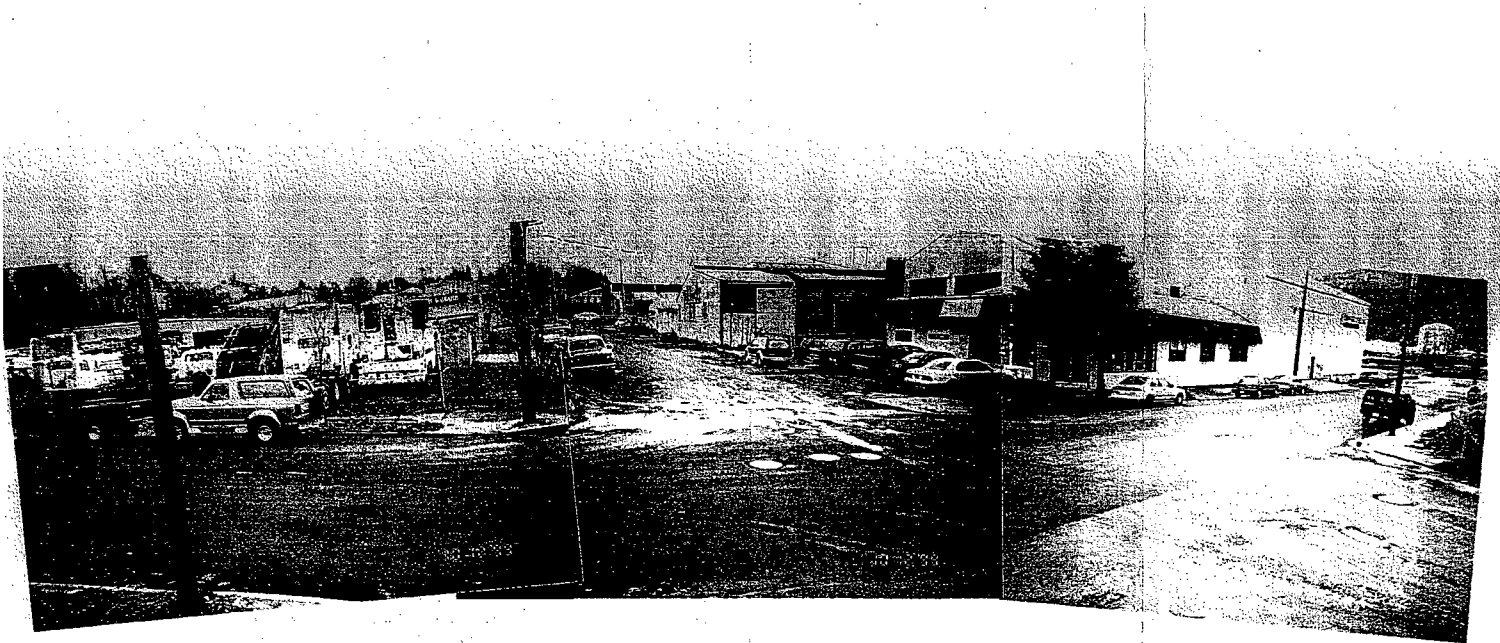


Photo No. 1

Photo Date: 12/8/99

Looking southeast from intersection of North Burlington and North Crawford Streets.

CRAW00014412

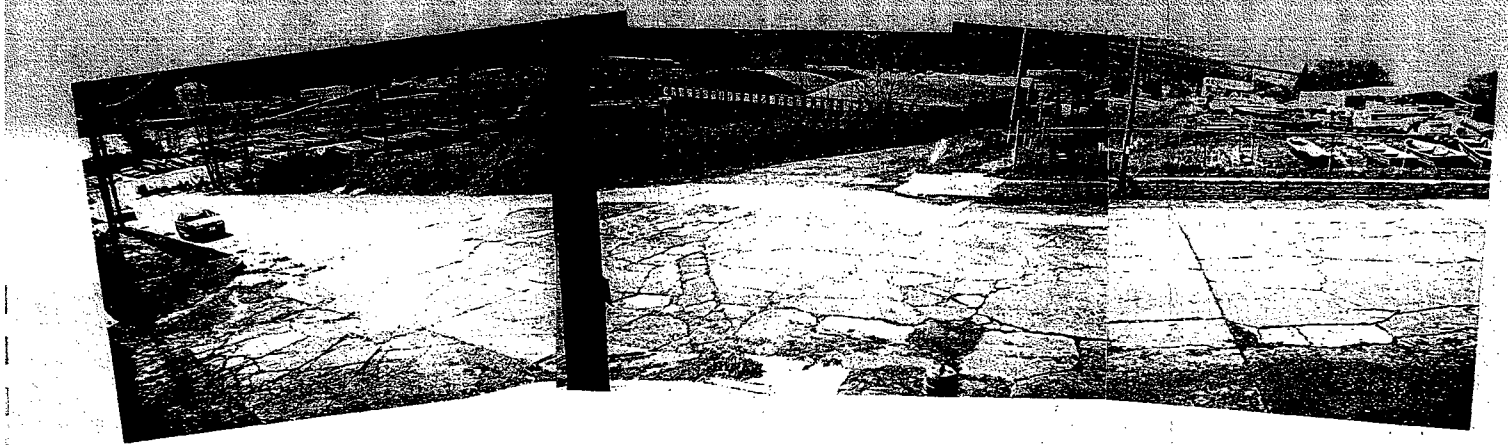


Photo No. 2

Looking southwest from intersection of North Richmond and North Crawford Streets.

Photo Date: 12/9/99

CRAW00014413

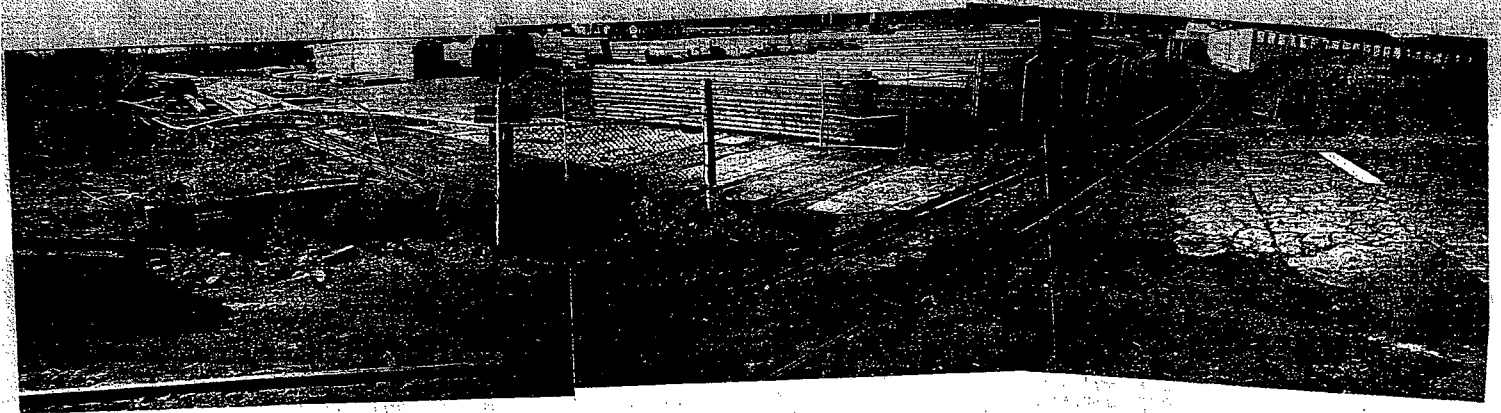


Photo No. 3

Photo Date: 4/28/99

Looking southwest into South Area (Lampros Steel storage yard) from intersection of UPRR rail spur and North Richmond Street.

CRAW00014414

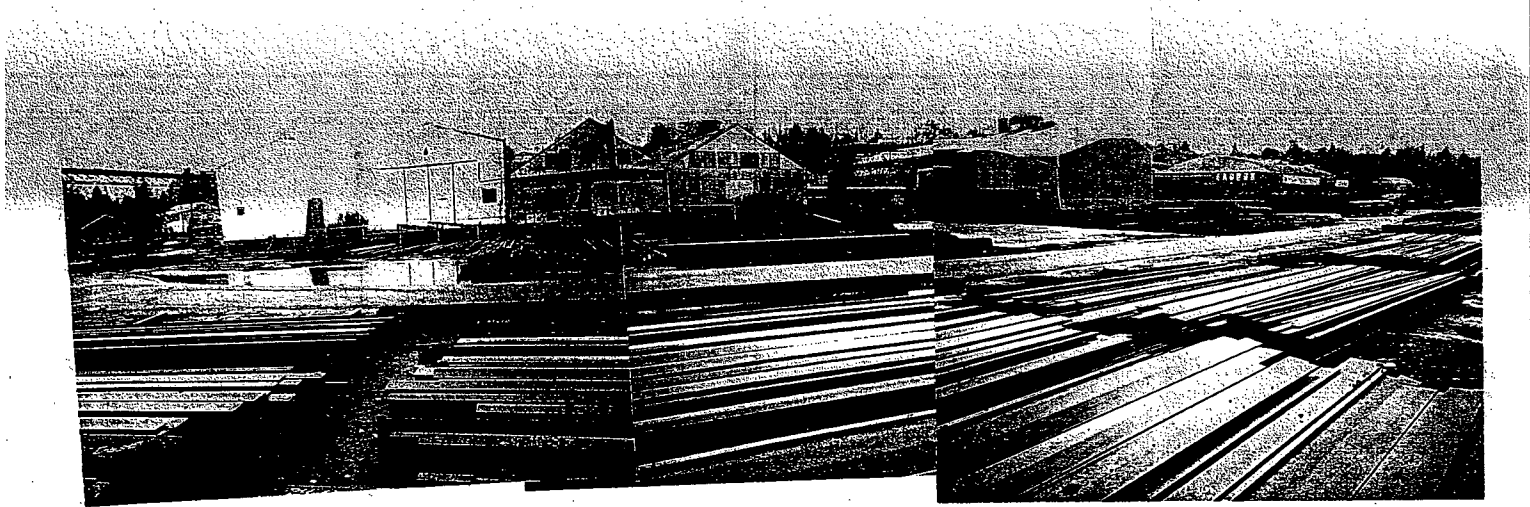


Photo No. 4

Photo Date: 12/9/99

Looking north across South Area (Lampros Steel storage yard) at south side of Columbia Forge and Lampros Steel.

CRAW00014415

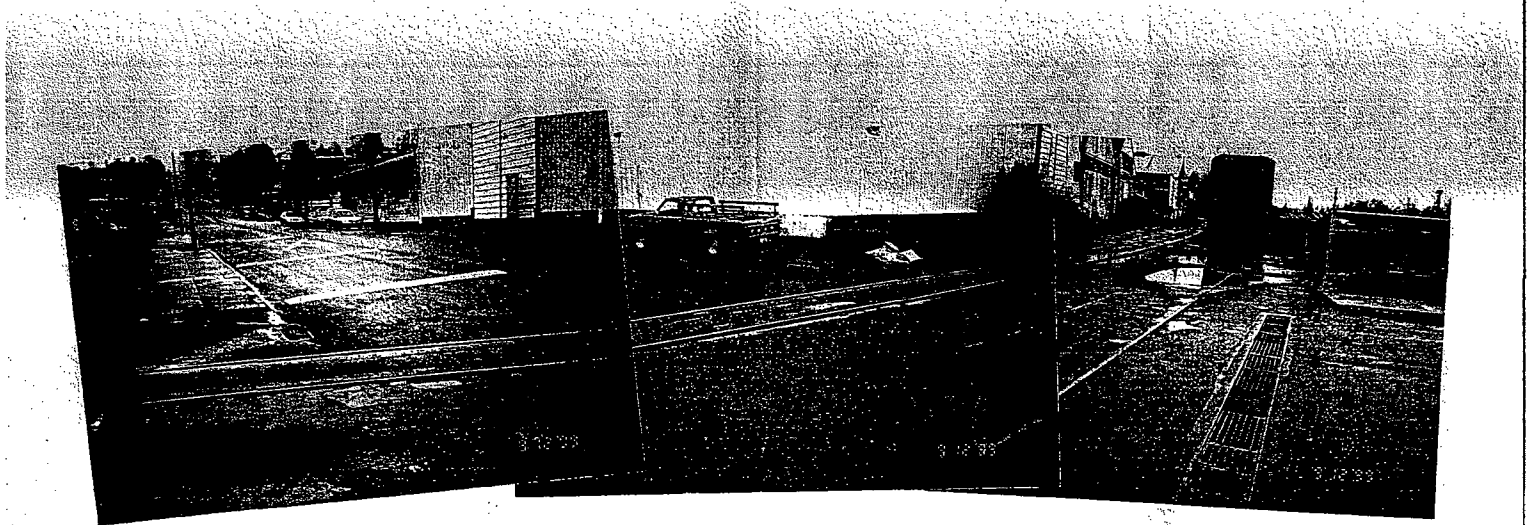


Photo No. 5

Photo Date: 12/9/99

Looking northeast from intersection of North Burlington Street and UPRR rail spur.

CRAW00014416

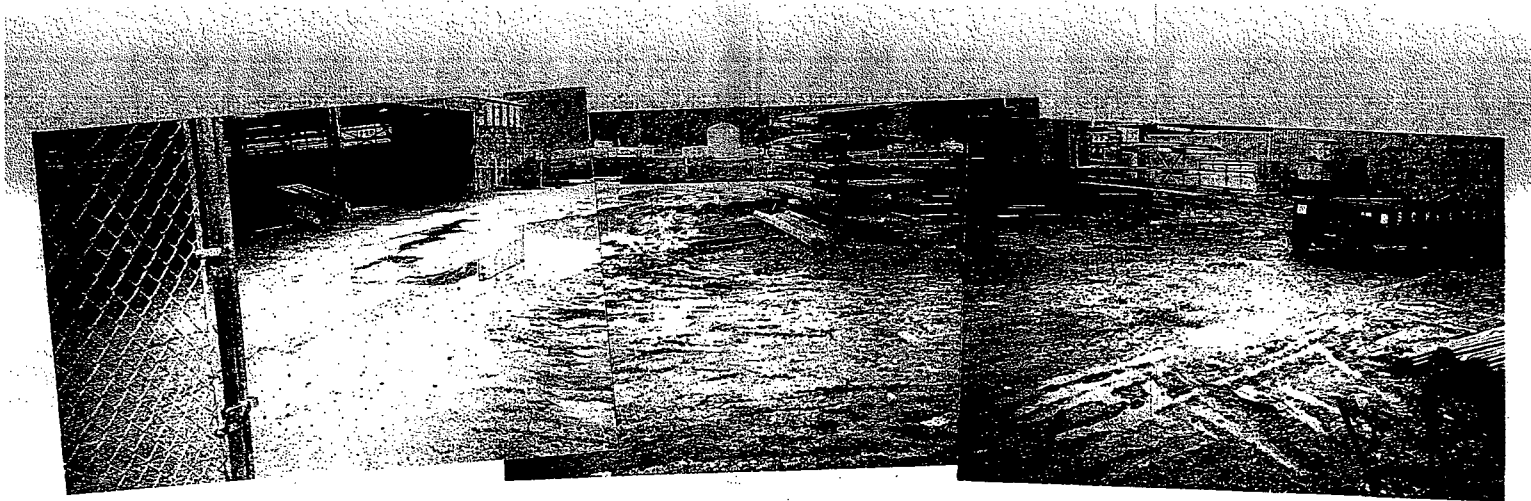


Photo No. 6

Photo Date: 12/9/99

Looking south across Columbia Forge/Lampros Steel yard.

CRAW00014417

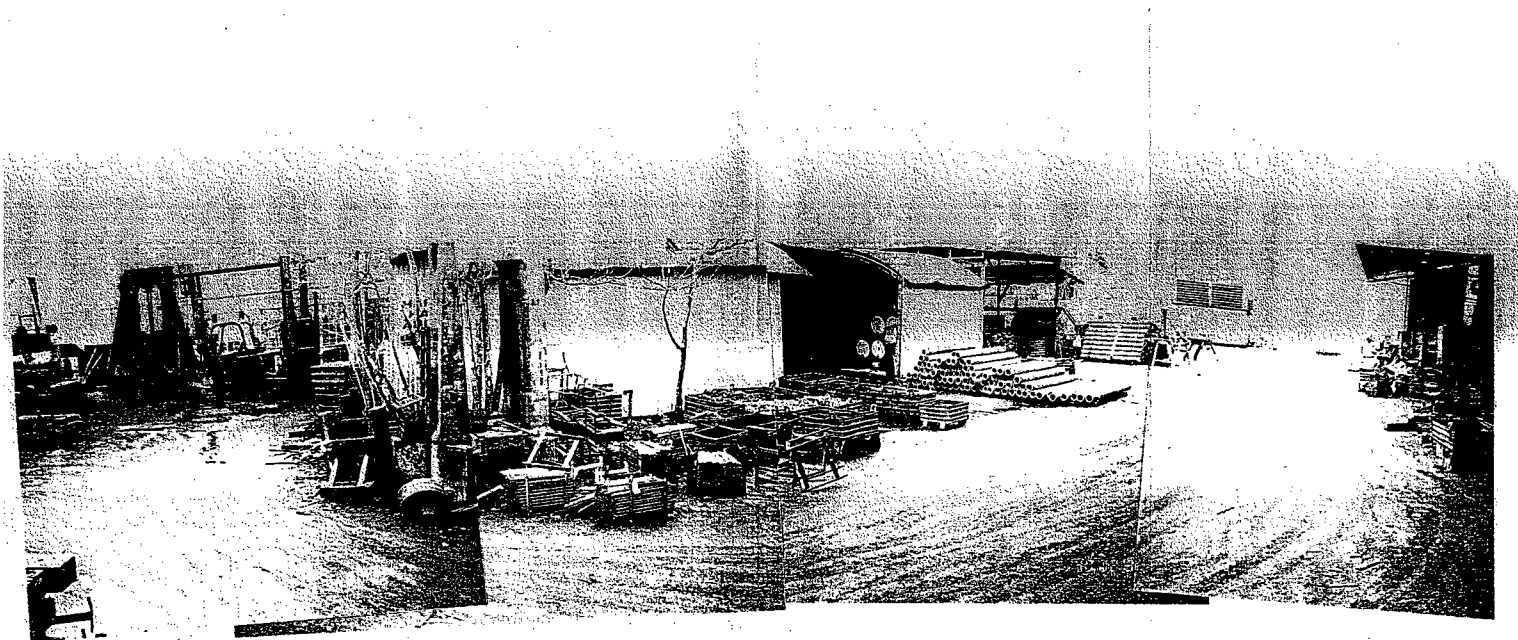


Photo No. 7

Photo Date: 12/9/99

Columbia Forge Yard. Looking northwest.

CRAW00014418

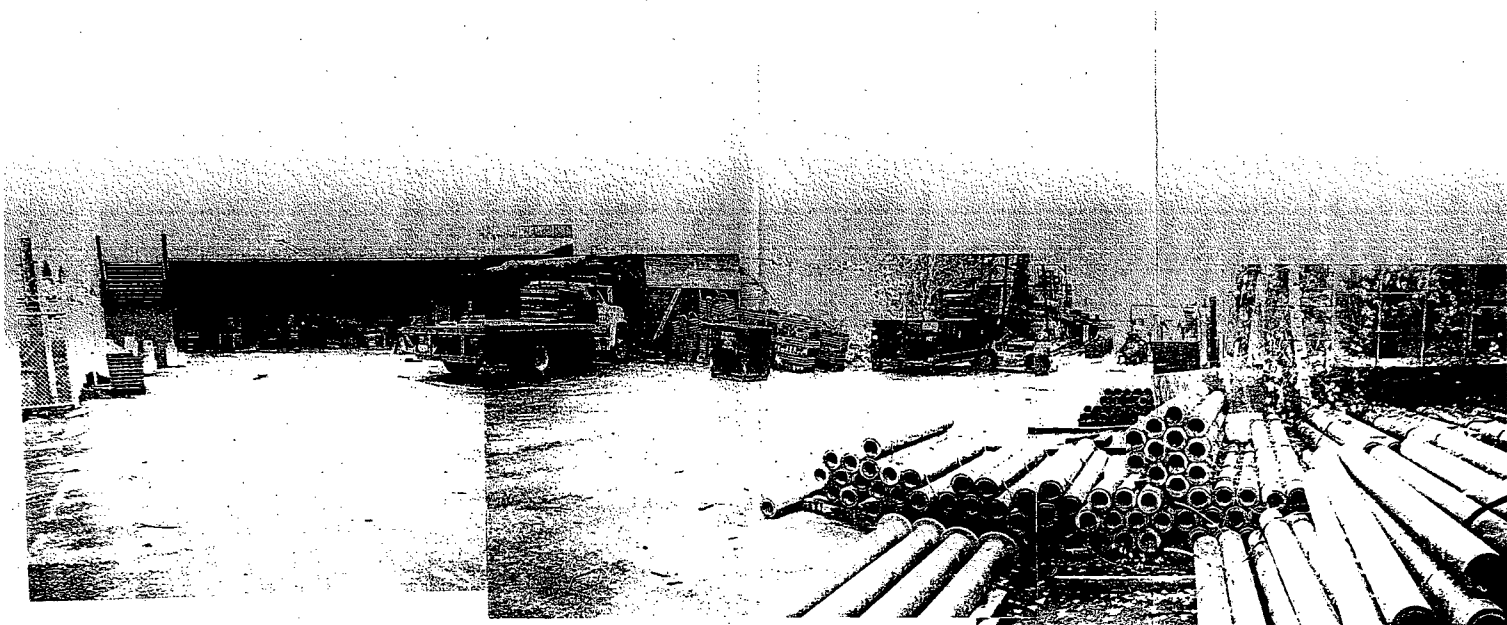


Photo No. 8

Photo Date: 12/9/99

Columbia Forge Yard. Looking southeast.

CRAW00014419



Photo No. 9

Photo Date: 12/9/99

Southwest area of Columbia Forge Building 1. Looking south.

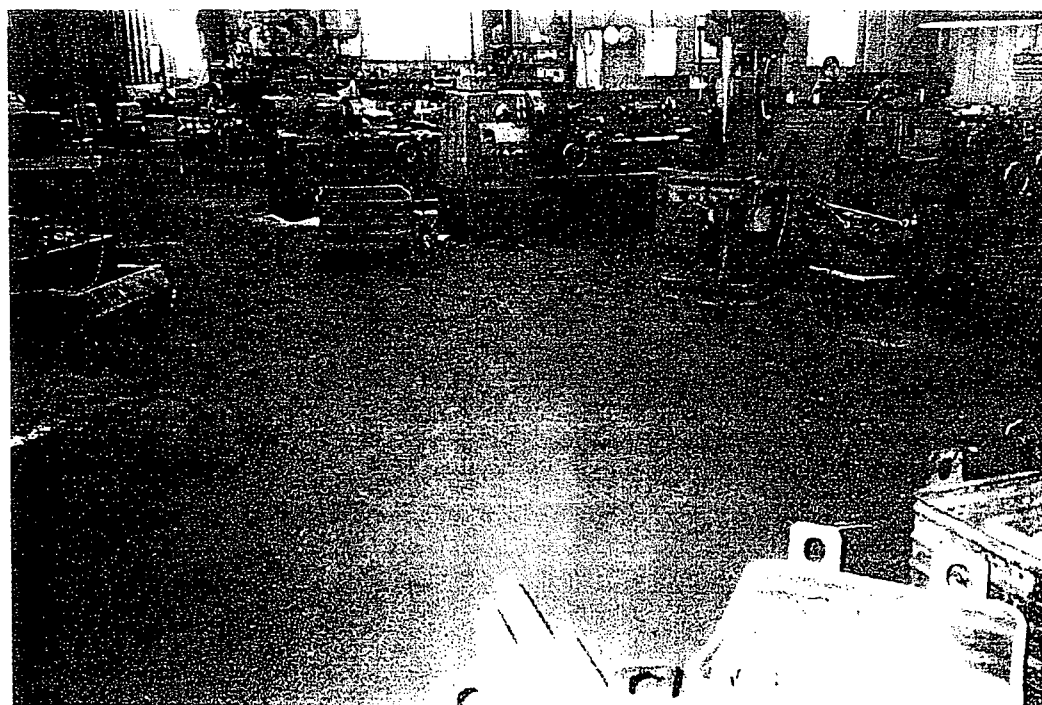


Photo No: 10

Photo Date: 12/9/99

Machine Shop in north portion of Columbia Forge Building 1.



Photo No. 11

Photo Date: 12/9/99

Inside Lampros Steel

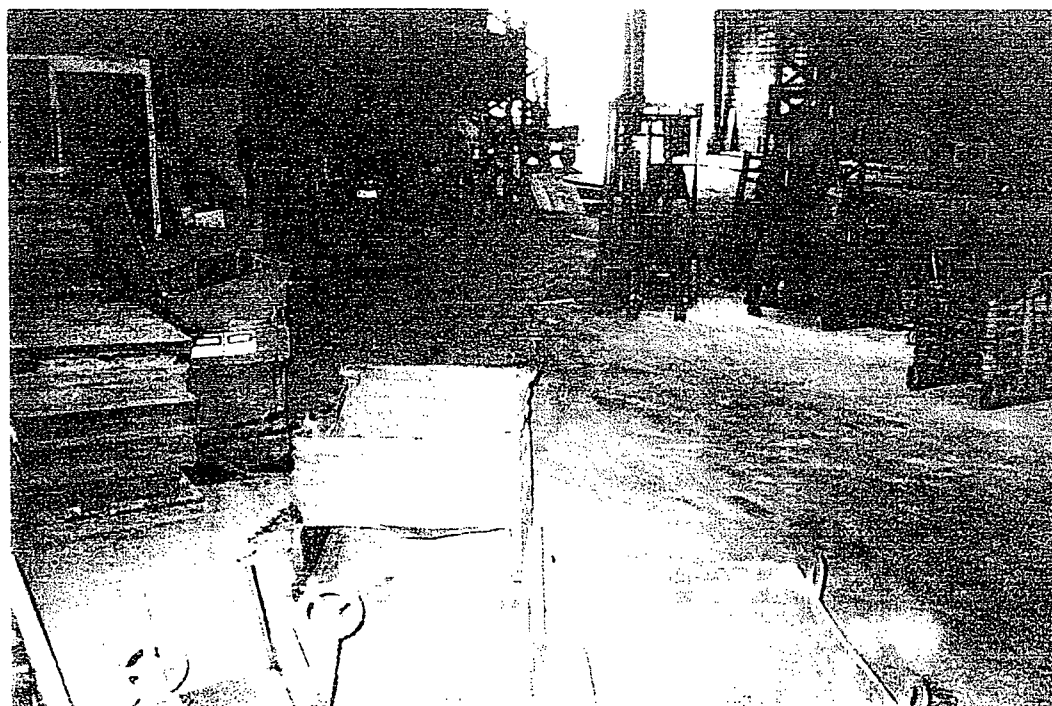


Photo No: 12

Photo Date: 12/9/99

Inside Lampros Steel building at west end of site.

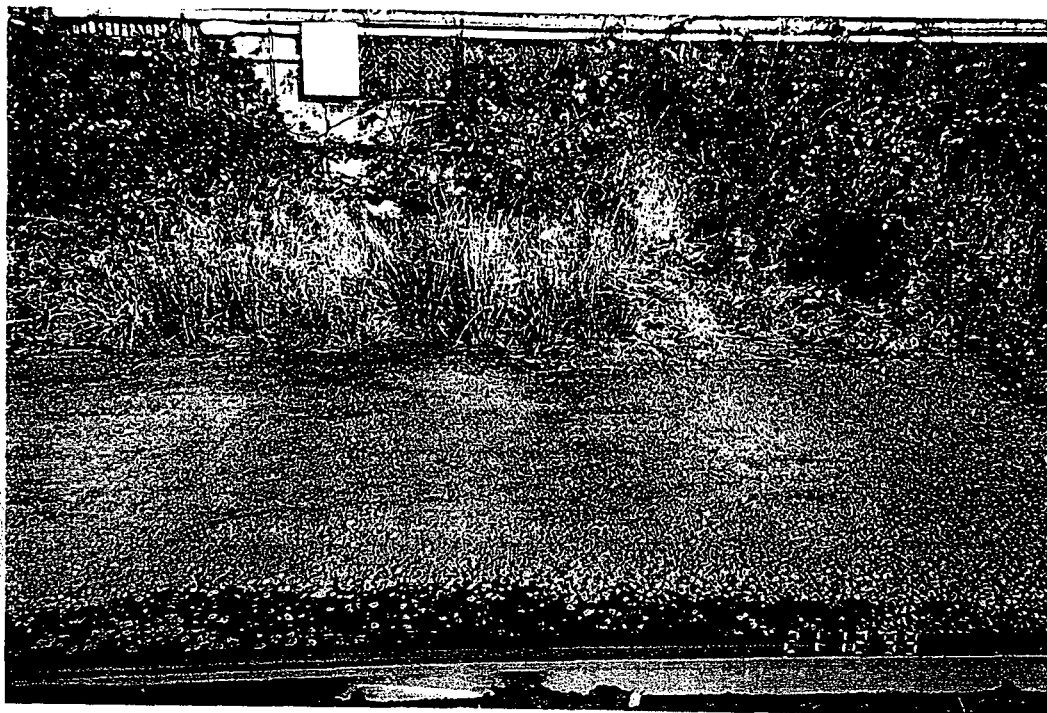


Photo No. 14

Photo Date: 12/21/99

Looking north at drain line outlet from west end of Columbia Forge yard.

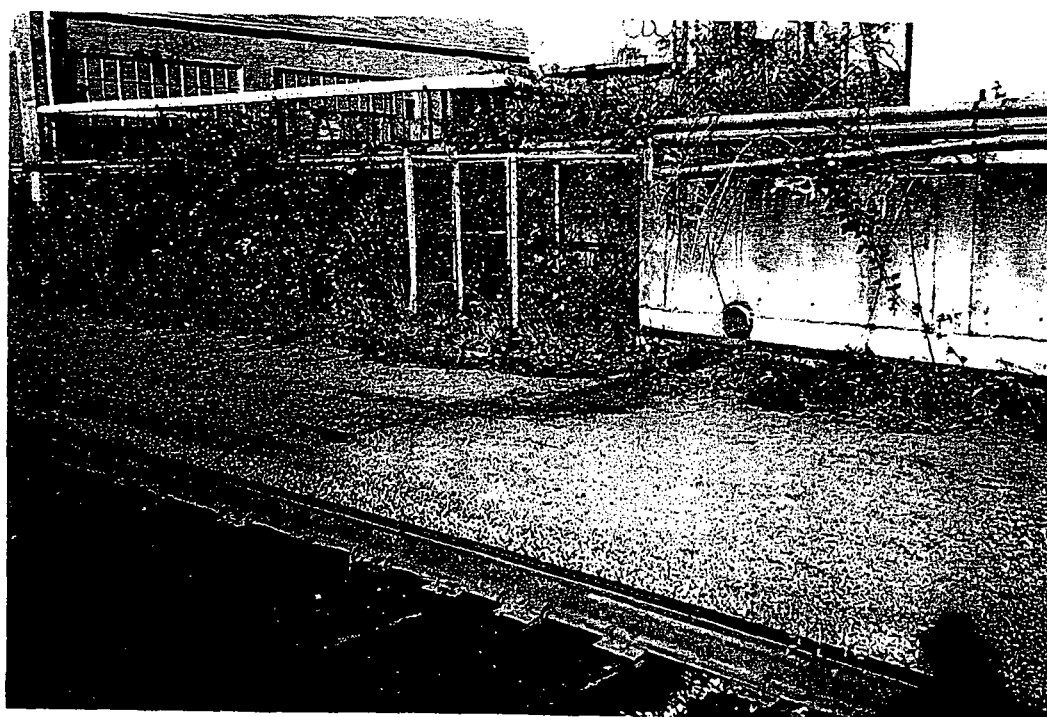


Photo No: 15

Photo Date: 12/21/99

Looking north at drain line outlet from east end of Columbia Forge yard.

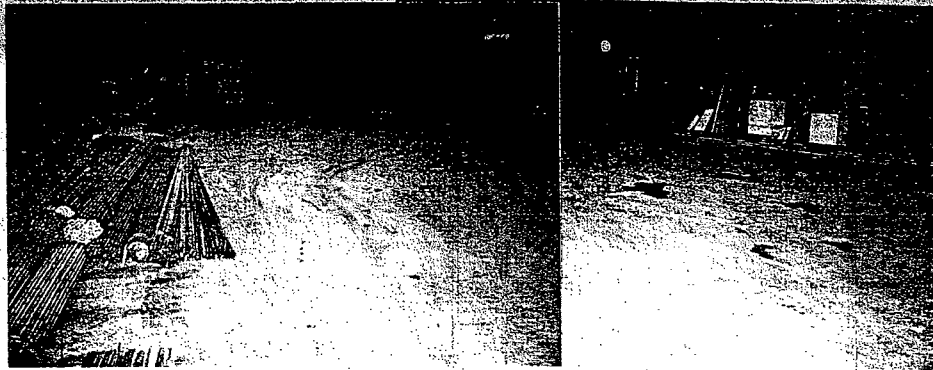


Photo No. 13

Inside Lampros Steel building at west end of site.

Photo Date: 12/9/99

CRAW00014423

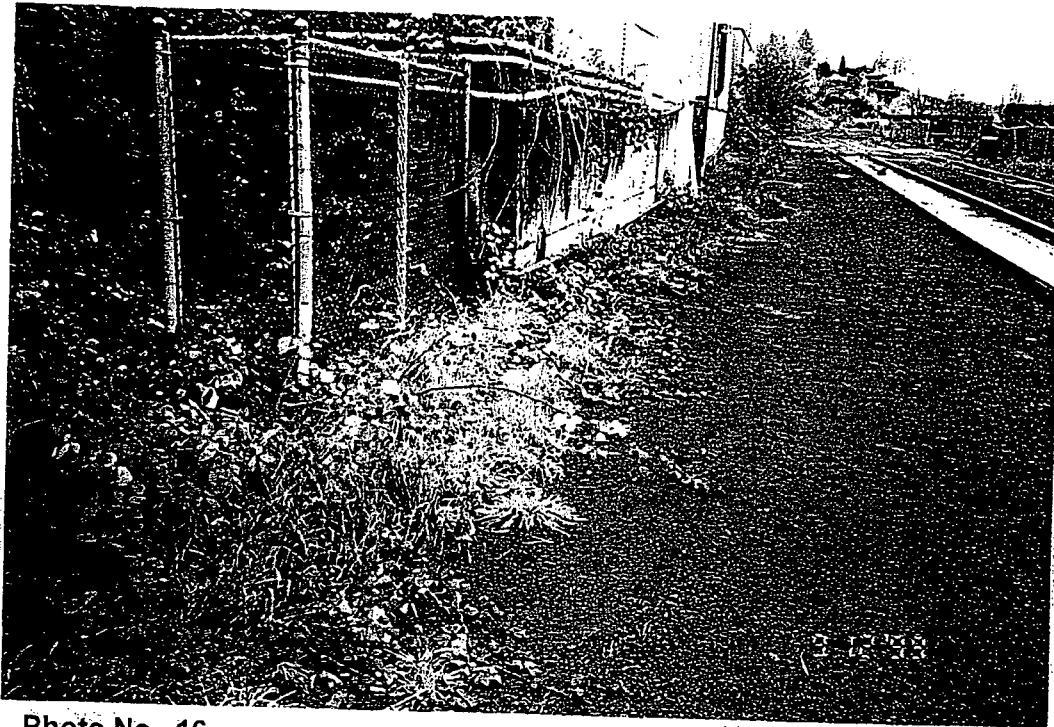


Photo No. 16

Photo Date: 12/9/99

Looking east along UPRR rail spur from south side of Columbia Forge yard.



Photo No: 17

Photo Date: 12/21/99

Typical river bank conditions.



Photo No. 18

Photo Date: 12/21/99

Looking north from north side of Columbia Forge/Lampros Steel yard at St. Johns Truck and Equipment debris yard. Storm water runs from this area, across Crawford Street, and on to and across the storage yard.



Photo No: 19

Photo Date: 12/21/99

Stained wash area adjacent to Crawford Street at St. Johns Truck and Equipment. Across Crawford Street from Columbia Forge.



Photo No. 20

Photo Date: 12/21/99

Looking north at St. Johns Truck and Equipment truck storage yard. Storm water runs from this area, across Crawford Street, and on to and across the Lampros and TLS Steel areas.



Photo No: 21

Photo Date: 12/21/99

Looking south down North Richmond Street. Storm water flows down this street to UPRR rail spur area and to the Lampros Steel south storage yard.

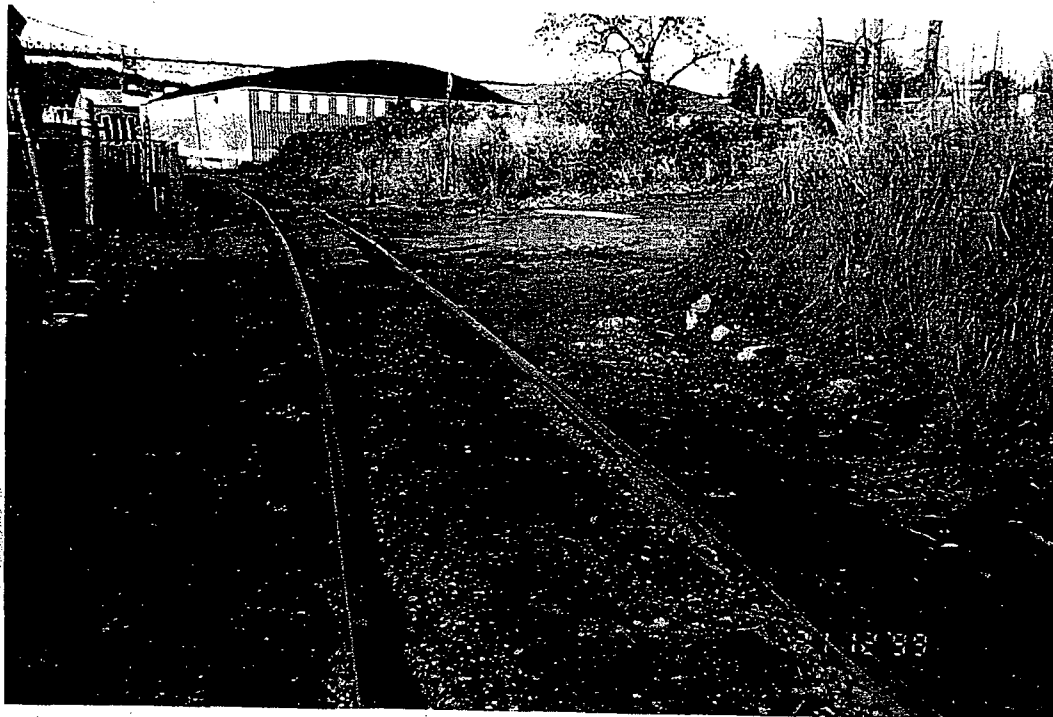


Photo No. 22

Photo Date: 12/21/99

Looking west from east of site along UPRR rail spur. Note fresh oil stain in rail alignment east of Crawford Street. Stain drips continue onto the Crawford Street site.

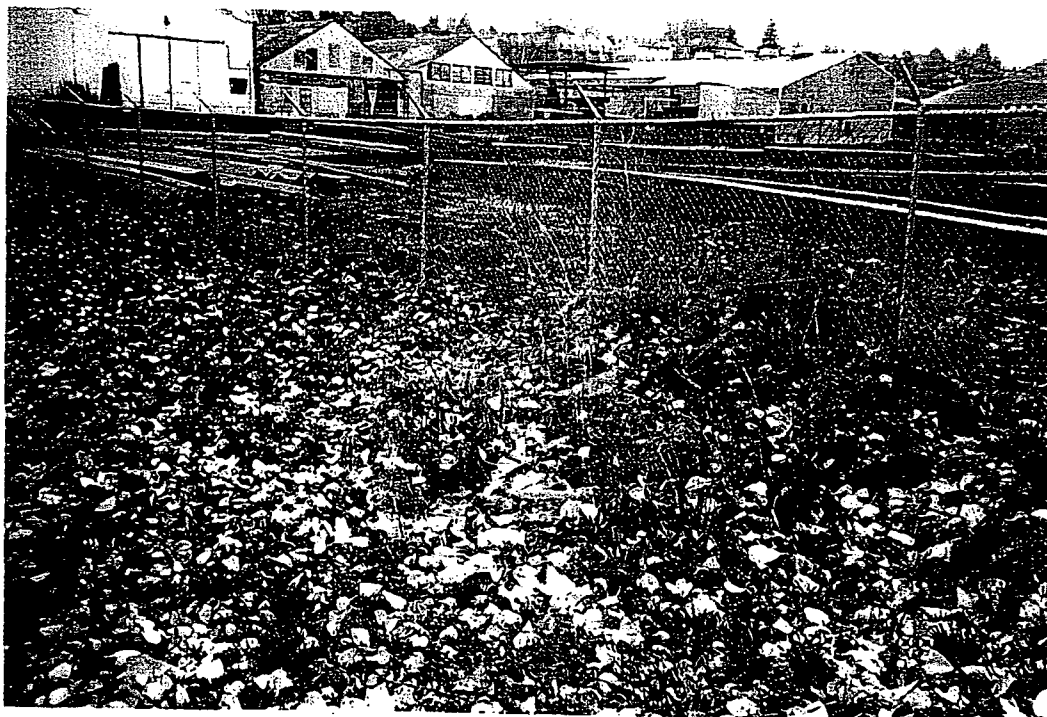


Photo No: 23

Photo Date: 12/9/99

Looking northeast from City of Portland property west of Crawford Street site. Note asphalt and concrete debris pile on City property.

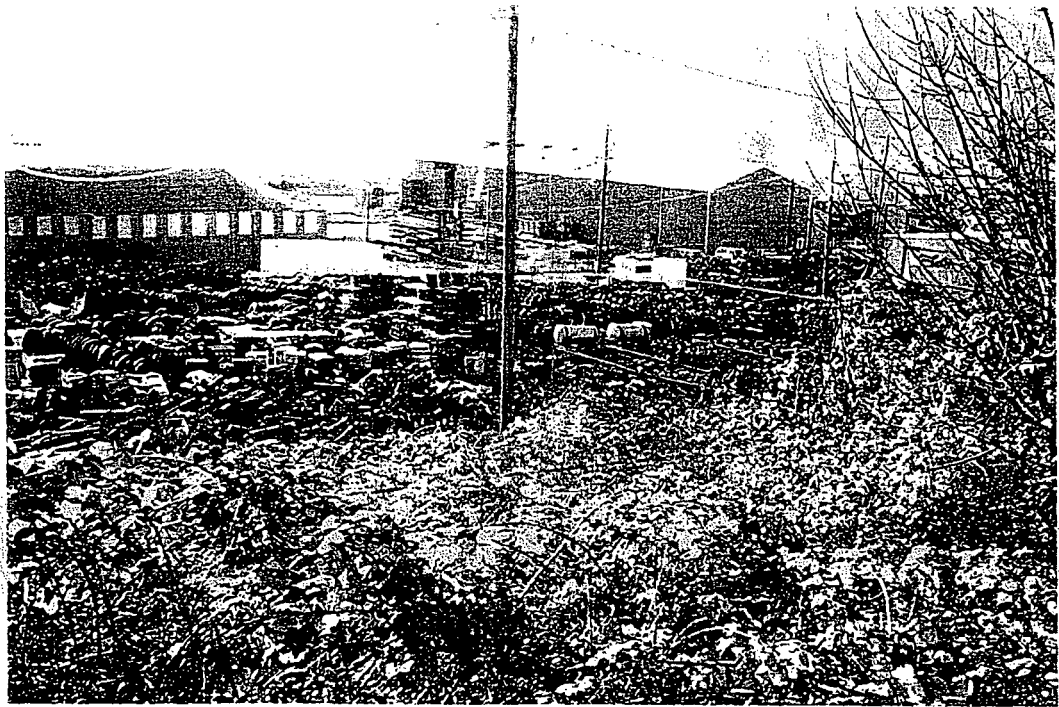


Photo No. 24

Photo Date: 12/21/99

Looking south from hill above site. St. Johns Truck and Equipment debris yard north (up gradient) of Crawford Street site.



Photo No: 25

Photo Date: 12/21/99

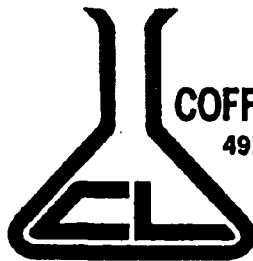
Looking north from south end of Columbia Forge/Lampros Steel yard at UPRR rail spur. St. Johns Truck and Equipment debris yard in distance. Lampros Steel beam cutting building on right.

APPENDIX B

CRAW00014429

APPENDIX B

**ANALYTICAL LABORATORY REPORT FOR
UNDERGROUND STORAGE TANK REMOVAL
SOIL SAMPLES**



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

March 19, 1987

Log #A870316-B1-2

PO#: 2842

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Sample ID: #1 - Skookum, 3/13/87
#2 - Yard, 3/13/87

Samples Received: March 13, 1987

Samples Collected by: Crosby & Overton

ANALYSIS	SAMPLE #1	SAMPLE #2
-----	-----	-----
Gasoline*	< 1.0	16**
Diesel*	< 1.0	< 1.0
Lead	---	30.0

Results in mg/kg

* Analysis by extraction capillary GC/FID.

** Appears to contain some other high boiling oil and possibly some kerosene.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved by,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

*Soil anal
Yard*

SMC/gs

This report is for the sole and exclusive use of the above client. (no)
Samples are retained a maximum of 15 days from the date of this letter.

B 11587

CRAW00014431



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

March 24, 1987

Log #A870316-B1-2

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

ATTENTION: John Shore

SUBJECT: EP TOXICITY ANALYSIS

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980,
Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: #2 - Yard
Collected by: Sample collected and delivered by client.

Sample Received: March 16, 1987

ANALYSIS -----	RESULTS -----	LIMIT -----
Lead	< 0.100	5.0

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Results are reported in milligrams per liter (mg/L)

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

*ordered with for 10
2nd soil OK
file only 21
done*

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.

B 11588

CRAW00014432



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

March 24, 1987

Log #A870319-K

PO#: 2864

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Analysis Requested: Total Hydrocarbons

Sample ID: #3 Weld Shop

Sample Date: March 19, 1987

Sample Received: March 19, 1987

ANALYSIS

RESULTS

Gasoline

< 4 mg/kg

Diesel

< 4 mg/kg

Analysis by capillary GC/FID

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Sincerely,

Susan M. Brillante

Susan M. Coffey

Susan M. Brillante,
Laboratory Director

Susan M. Coffey,
President

SMC/gs

*Soil and
Weld
(no rx)*

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.

B 11592

CRAW00014433

APPENDIX B

APPENDIX B

REPRESENTATIVE MATERIAL DATA SHEETS

Apr-12-00 11:18A

P. 22

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17338
PORTLAND, OREGON 97217
(503)286-1673

CHRISTENSON OIL MSDS AMP140

CHEMTREC 800-424-9300

PAGE 1 OF 5

PRODUCT CODE NO: NONE

SECTION 1 - IDENTIFICATION

PRODUCT : AERO MP GEAR OIL SAE 140
SYNONYMS :
CHEMICAL : PETROLEUM HYDROCARBONS
CAS NO. : MIXTURE - NO SINGLE CAS NUMBER APPLICABLE
SARA HAZARD : NONE NOTED (SECTION 311/312)
TITLE III SECTION 313 - LISTED

SECTION II - INGREDIENTS AND HAZARD CLASSIFICATION

COMPOSITION	%	PEL/TLV	HAZARD
MULTI-PURPOSE GEAR OIL SAE 80-90	100	NONE/NONE	NONE NOTED

SECTION III - HEALTH INFORMATION

INHALATION: THE ESTIMATED LC50 FOR A 1 HOUR EXPOSURE TO A SIMILAR COMPONENT OF THIS FORMULATION WAS 4.68 MG/L (RATS), WHICH IS CONSIDERED TOXIC. IN ORDER TO DETERMINE THE LC50 VALUE, EXTREMELY HEAVY MIST OF TEST MATERIAL WERE REQUIRED. THE VERY HEAVY MISTS AT THE NECESSARY CONCENTRATION MADE VISIBILITY DIFFICULT AND WOULD BE DIFFICULT TO WORK IN FOR ANY PERIOD OF TIME. THE AUTHOR REPORTED THAT HISTOPATHOLOGICAL CHANGES MAY HAVE BEEN A RESPONSE TO A PHYSICAL INSULT RATHER THAN A SPECIFIC COMPOUND RELATED TOXICITY EFFECT AND THAT THE TEST MATERIAL MAY BE CONSIDERED NON-HAZARDOUS FOR ALL PRACTICAL PURPOSES BY INHALATION.

INGESTION: FOR A SIMILAR COMPONENT OF THIS FORMULATION THE ACUTE ORAL LD50 VALUE WAS FOUND TO BE GREATER THAN 5.0 G/KG IN MALE AND FEMALE SPRAGUE-DAWLEY RATS. THE MATERIAL IS NOT CLASSIFIED AS TOXIC BY ORAL ADMINISTRATION AS DEFINED IN 16 CFR 1500.

CRAW00014517

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
PO BOX 17339
PORTLAND, OREGON 97217
(503)288-1673

CHRISTENSON OIL MSDS AMP140

CHEMTREC 800-424-9300

PRODUCT CODE NO: NONE

PAGE 2 OF 5

EYE CONTACT: THE PRODUCT IS NOT CLASSIFIED AS AN IRRITANT BY OCULAR APPLICATION. THE EYES OF NONE OF THE SIX NEW ZEALAND WHITE RABBITS WERE FOUND TO SHOW EVIDENCE OF POSITIVE CORNEAL, IRIS OR CONJUNCTIVAL CHANGES. FOR A SIMILAR COMPONENT OF THIS FORMULATION THE EYES OF 6 RABBITS WERE FOUND TO SHOW EVIDENCE OF CONJUNCTIVAL CHANGES. IRRITATION SCORES IN INDIVIDUAL RABBITS RANGED FROM 0-4 (SCALE 0-110). THE MATERIAL IS NOT CLASSIFIED AS AN IRRITANT BY OCULAR APPLICATION AS DEFINED BY 16 CFR 1500.

SKIN CONTACT: THE PRIMARY IRRITATION INDEX WAS FOUND TO BE 2.1 BASED ON ERYTHEMA AND EDEMA. NO EVIDENCE OF TISSUE DAMAGE (CORROSION) WAS FOUND. THE MATERIAL IS NOT CLASSIFIED AS A PRIMARY IRRITANT OR AS A CORROSIVE BY DERMAL APPLICATION. FOR A SIMILAR COMPONENT OF THIS FORMULATION THE PRIMARY IRRITATION INDEX WAS FOUND TO BE 0.5 (SCALE 0-8) BASED ON ERYTHEMA AND EDEMA. NO EVIDENCE OF TISSUE DAMAGE WAS FOUND. THE MATERIAL IS NOT CLASSIFIED AS A PRIMARY IRRITANT OR AS A CORROSIVE BY DERMAL APPLICATION AS DEFINED BY 16 CFR 1500.

SECTION IV - OCCUPATIONAL EXPOSURE LIMITS

PEL: TWA: 5MG/M3(OIL MIST)

PEL: TWA: 5MG/M3; STEL: 10 MG/M3 (OIL MIST)

SECTION V - EMERGENCY FIRST AID PROCEDURE

FOR OVEREXPOSURE BY SWALLOWING: DO NOT INDUCE VOMITING. IF VICTIM IS CONSCIOUS AND ABLE TO SWALLOW, PROMPTLY HAVE VICTIM DRINK WATER TO DILUTE. DO NOT GIVE SODIUM BICARBONATE, FRUIT JUICES OR VINEGAR. NEVER GIVE ANYTHING BY MOUTH IF THE VICTIM IS UNCONSCIOUS OR HAVING CONVULSIONS. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY.

FOR OVEREXPOSURE BY SKIN CONTACT: WASH AFFECTED AREA.

FOR OVEREXPOSURE BY EYE CONTACT: IMMEDIATELY FLUSH EYES WITH PLENTY OF COOL WATER FOR AT LEAST 15 MINUTES. DO NOT LET VICTIM RUB EYES.

FOR OVEREXPOSURE BY INHALATION: IMMEDIATELY REMOVE VICTIM TO FRESH AIR. IF VICTIM HAS STOPPED BREATHING GIVE ARTIFICIAL RESPIRATION, PREFERABLY BY MOUTH - TO - MOUTH. GET MEDICAL ATTENTION IMMEDIATELY.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

MORRISON OIL MSDS AMP140

PAGE 3 OF 6

PRODUCT CODE NO.: NONE

SECTION VI - PHYSICAL DATA

BOILING POINT:	NOT DETERMINED
MELTING POINT:	NOT DETERMINED
VAPOR PRESSURE:	NOT DETERMINED
SPECIFIC GRAVITY:	0.91 AT 60/60 DEG F
SOLUBILITY IN WATER:	NEGLIGIBLE
APPEARANCE AND COLOR:	DARK COLORED LIQUID WITH A PUNGENT ODOR

SECTION VII - FIRE AND EXPLOSION HAZARDS

FLASH POINT & METHOD USED: 400 °F (204°C) ASTM D-92
AUTO-IGNITION TEMPERATURE: 650 °F
FLAMMABLE LIMITS IN AIR, % BY VOL. LOWER: NOT DETERMINED
FLAMMABLE LIMITS IN AIR, % BY VOL. UPPER: NOT DETERMINED
NFPA RATING: NO NFPA RATING
HMIS RATING: HEALTH (1) FIRE (1) REACTIVITY (0)
SPECIAL FIRE FIGHTING PROCEDURES & PRECAUTIONS

(INDIVIDUALS SHOULD PERFORM ONLY THOSE FIRE FIGHTING PROCEDURES FOR WHICH THEY HAVE BEEN TRAINED). USE WATER SPRAY, DRY CHEMICAL, FOAM OR CARBON DIOXIDE. WATER MAY BE INEFFECTIVE BUT SHOULD BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL IF A SPILL OR LEAK HAS NOT IGNITED, USE WATER SPRAY TO DISPERSE THE VAPORS. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM FIRE.

UNUSUAL FIRE & EXPLOSION HAZARDS

FIREFIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS IN THE POSITIVE-PRESSURE MODE WITH A FULL FACEPIECE WHEN THERE IS A POSSIBILITY OF EXPOSURE TO SMOKE, FUMES OR HAZARDOUS DECOMPOSITION PRODUCTS.

SECTION VIII - REACTIVITY

STABILITY:
GENERALLY STABLE

HAZARDOUS POLYMERIZATION:
NOT LIKELY

CONDITIONS & MATERIALS TO AVOID:
AVOID HEATING TO DECOMPOSITION.
THE USER IS ADVISED TO HAVE A SAFETY EXPERT EVALUATE THE SPECIFIC CONDITIONS OF USE.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

CHRISTENSON OIL MSDS AMP140

PAGE 4 OF 6

PRODUCT CODE NO.: NONE

HAZARDOUS DECOMPOSITION PRODUCTS:

DECOMPOSITION MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE AND OXIDES OF NITROGEN, PHOSPHORUS AND SULFUR.

SECTION IX - EMPLOYEE PROTECTION**CONTROL MEASURES:**

HANDLE IN THE PRESENCE OF ADEQUATE VENTILATION.

RESPIRATORY PROTECTION:

WHERE EXPOSURE IS LIKELY TO EXCEED ACCEPTABLE CRITERIA (SEE SECTIONS II AND IV), USE NIOSH/OSHA APPROVED RESPIRATORY EQUIPMENT. RESPIRATORS SHOULD BE SELECTED BASED ON THE FORM AND CONCENTRATION OF CONTAMINANT IN AIR AND ACCORDANCE WITH OSHA (29 CFR 1910.134).

PROTECTIVE CLOTHING:

WEAR GLOVES AND PROTECTIVE CLOTHING WHICH ARE IMPERVIOUS TO THE PRODUCT FOR THE DURATION OF ANTICIPATED EXPOSURE IF THERE IS A POTENTIAL FOR PROLONGED OR REPEATED SKIN CONTACT.

EYE PROTECTION:

WEAR SAFETY GLASSES MEETING THE SPECIFICATIONS OF ANSI STANDARD Z87.1

SECTION X - ENVIRONMENTAL PROTECTION**ENVIRONMENTAL PRECAUTIONS:**

AVOID UNCONTROLLED RELEASES OF THIS MATERIAL WHERE SPILLS ARE POSSIBLE. A COMPREHENSIVE SPILL RESPONSE PLAN SHOULD BE DEVELOPED AND IMPLEMENTED.

SPILL OR LEAK PRECAUTIONS:

WEAR APPROPRIATE RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING AS DESCRIBED IN SECTION IX. CONTAIN SPILLED MATERIAL. TRANSFER TO SECURE CONTAINERS. WHERE NECESSARY, COLLECT USING ABSORBENT MEDIA. IN THE EVENT OF AN UNCONTROLLED RELEASE OF THIS MATERIAL, THE USER SHOULD DETERMINE IF THE RELEASE IS REPORTABLE UNDER APPLICABLE LAWS AND REGULATION.

WATER DISPOSAL:

ALL RECOVERED MATERIAL SHOULD BE PACKAGED, LABELED, TRANSPORTED AND DISPOSED OR RECLAIMED IN CONFORMANCE WITH APPLICABLE LAWS AND REGULATIONS AND IN CONFORMANCE WITH GOOD ENGINEERING PRACTICES. AVOID LANDFILLING OF LIQUIDS. RECLAIM WHERE POSSIBLE.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)288-1673

CHRISTENSON OIL MSDS #AMP140

8 OF 8

PRODUCT CODE NO.: NONE

SECTION XI- REGULATORY CONTROLS

DEPARTMENT OF TRANSPORTATION:
DOT CLASSIFICATION: NOT REGULATED
DOT PROPER SHIPPING NAME:
OTHER DOT INFORMATION:

OTHER REGULATORY REQUIREMENTS:
LISTED IN TSCA INVENTORY

SECTION XII - PRECAUTIONS: HANDLING, STORAGE AND USAGE

NO SPECIAL PRECAUTIONS NECESSARY.

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Christenson Oil bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

ISSUE DATE: January 17, 1994

SUPERSEDES:

Apr-17-00 09:55A

P.02

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

CHRISTENSON OIL MSDS #DWO68

PAGE 1 OF 5

PRODUCT CODE NO.: NONE

MANUFACTURER: CHRISTENSON OIL 3747 N. SUTTLE RD. P.O. BOX 17339 PORTLAND, OREGON 97217 CONTACT FOR FURTHER INFORMATION: CALL (503) 286-1673		TRANSPORTATION EMERGENCIES: CALL CHEMTREC (800) 424-9300 CONTINENTAL U.S.		
PRODUCT IDENTIFICATION				
PRODUCT NAME		: DUREX HEAVY DUTY WAY OIL 68		
SYNONYMS		: WAY OIL		
GENERIC NAME		: WAY OIL 68		
CHEMICAL FAMILY		: PETROLEUM HYDROCARBON; INDUSTRIAL OILS		
DOT PROPER SHIPPING		: NOT DOT REGULATED		
ID NUMBER		: NONE		
ACUTE HEALTH 1	FIRE 1	REACTIVITY 0	HAZARD RATING LEAST MODERATE EXTREME -0 -2 -4	SLIGHT HIGH -1 -3

SECTION I - INGREDIENTS

NO.	COMPOSITION	CAS NUMBER	PERCENT
-----	-------------	------------	---------

P	DUREX HEAVY DUTY WAY OIL 68	MIXTURE	100
1	PETROLEUM BASESTOCK	64742-18-3	0-100
2	PETROLEUM BASESTOCK	64742-70-7	0-100
3	POLYMERIC ADDITIVE	MIXTURE	0-1
4	WAY OIL ADDITIVE	MIXTURE	0-10

MATERIAL SAFETY DATA SHEET

2 OF 5

CHRISTENSON OIL MSDS#DWO68

SECTION I - B - ACUTE TOXICITY DATA

NO.	ACUTE ORAL LD50	ACUTE DERMAL LD 50	ACUTE INHALATION LC50
P	NOT AVAILABLE		

SECTION II - EMERGENCY AND FIRST AID PROCEDURES**EYE CONTACT:**

Flush with water for 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT:

Remove contaminated clothing and wipe excess off. Wash with soap and water or a waterless hand cleaner followed by soap and water. If irritation occurs, get medical attention.

INHALATION (BREATHING):

Remove victim to fresh air and provide oxygen if breathing is difficult. Get medical attention.

INGESTION (SWALLOWING):

Do not induce vomiting. In general, no treatment is necessary unless large quantities of product are ingested. However, get medical advice.

NOTE TO PHYSICIAN:

In general, emesis induction is unnecessary in high viscosity, low volatility products, i.e., most oils and greases.

SECTION III - OCCUPATIONAL EXPOSURE LIMITS

OSHA

ACGIH

NO.	PEL/TWA	PEL/CEILING	TLV/TWA	TLV/STEL	OTHER
P	5MG/M3*	NONE	5MG/MG*	10MG/M3*	N/AV

NOTE:

* Oil mist, mineral oil.

MATERIAL SAFETY DATA SHEET

PAGE 3 OF 5

CHRISTENSON OIL MSDS#DWO68

HEALTH INFORMATION

The health effects noted below are consistent with requirements under the OSHA hazard Communication Standard (29 CFR 1910.1200)

EYE CONTACT

Lubricating oils are generally considered no more than mildly irritating to the eyes.

SKIN CONTACT

Lubricating oils are generally considered no more than mildly irritating to the skin. Prolonged and repeated contact may lead to various skin disorders such as dermatitis, oil acne or folliculitis.

INHALATION

Inhalation of vapors (generator at high temperatures only) or oil mist from this product may cause minor irritation of the mucous membranes of the upper respiratory tract.

INGESTION

Lubricating oils are generally considered no more than slightly toxic if swallowed.

SIGNS AND SYMPTOMS

Irritation as noted above.

AGGRAVATED MEDICAL CONDITIONS

Pre-existing skin and respiratory disorders may be aggravated by exposure to this product.

OTHER HEALTH EFFECTS

SEE SECTION V FOR ADDITIONAL HEALTH INFORMATION.

SECTION IV - SPECIAL PROTECTION INFORMATION**RESPIRATORY PROTECTION:**

If exposure may or does exceed occupational exposure limits use an NIOSH approved respirator to prevent overexposure. In accordance with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapor.

PROTECTION CLOTHING

The use of gloves impermeable to the specific material handled is advised to prevent skin contact and possible irritation.

MATERIAL SAFETY DATA SHEETS**PAGE 4 OF 5****CHRISTENSON OIL MSDS#DWO68****SECTION V - REACTIVITY DATA****STABILITY: STABLE****CONDITIONS AND MATERIALS TO AVOID:**

Avoid heat, open flames and oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

Smoke, carbon monoxide, aldehydes and other products of incomplete combustion.

SECTION - FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD:
610 DEF P (COC)

FLAMMABLE LIMITS / % VOLUME IN AIR
LOWER: N/AV UPPER: N/AV

EXTINGUISHING DATA

Use water fog, foam, dry chemical or CO₂. Do not use a direct stream of water. Product will float and can be reignited on surface of water.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Material will not burn unless preheated

**DOT FLAMMABILITY
CLASSIFICATION**
NOT REGULATED 381F (COC)

EXTINGUISHING MEDIA:

EXTINGUISH WITH DRY CHEMICAL, CO₂, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.

FIRE & EXPLOSION HAZARDS:

THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:

WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINER EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSE. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL MSDS #DWO68

PAGE 5 OF 5

SECTION IX - PHYSICAL DATA

APPROX BOILING POINT	VAPOR DENSITY	EVAPORATION RATE	% VOLATILE
+600F (316C)	HEAVIER THAN AIR	SLOWER THAN ETHER	NEGLIGIBLE

% SOLUBILITY IN WATER	SPECIFIC GRAVITY	APPEARANCE	ODOR
NEGLIGIBLE	N/A	CLEAR, BROWN LIQUID	CHARACTERISTIC

SECTION X - PRECAUTIONARY LABEL

CAUTION! USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TEST WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADEQUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

SECTION XI - DOCUMENTARY INFORMATION

ISSUE DATE	:	July 17, 1995	PRODUCT CODE NO.	:	NONE
MSDS NO.	:	DWO68	PREV. PROD. CODE NO.:		DWO68
			PREV. MSDS NO.	:	NONE

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

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This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

MATERIAL SAFETY
DATA SHEET

VALVOLINE OIL COMPANY
DIVISION OF ASHLAND OIL, INC.
P.O. BOX 391
ASHLAND, KENTUCKY 41114
(606) 329-3333

24-HOUR
EMERGENCY
TELEPHONE
(606) 324-1133

000074

VAL-PLKX EP

PAGE: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

PRODUCT NAME: VAL-PLKX EP
CAS NUMBER: TN LIST

CHRISTENSON OIL CO

3801 NW 17 MILE RD

PORTLAND OR 97140

ATTN: PLANT MGR / SAFETY DIR.

SE 75 000 0515520-000
DATA SHEET NO: 0172179-001
LATEST REVISION DATE: 09/05/99
PRODUCT: SLO
INVOICE: 02048
INVOICE DATE: 09/03/97
TO:

SECTION I-PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: PETROLEUM GREASE

DOT HAZARD CLASSIFICATION: NOT APPLICABLE

SECTION II-COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS ARE IDENTIFIED IN THIS SECTION
SEE DEFINITION PAGE FOR CLASSIFICATION

INGREDIENT	% (BY WT)	NOTE
LUBRICATING GREASE B	100	(1)
CAS N: TN LIST		

(1): RELATIVELY NOT ESTABLISHED FOR THIS MATERIAL

B THE SPECIFIC CHEMICAL IDENTITY HAS BEEN WITHHELD AS A TRADE SECRET.

SECTION III-PHYSICAL DATA

PROPERTY	REFINEMENT	MEASUREMENT
BOILING POINT	FOR PRODUCT	> 700.00 DEG F (371.11 DEG C) 700.00 MMHG
VAPOR PRESSURE	NOT APPLICABLE	
SPECIFIC VAPOR DENSITY	NOT APPLICABLE	
SPECIFIC GRAVITY		0.90 (15.55 DEG C)
PERCENT VOLATILES	NOT APPLICABLE	
EVAPORATION RATE	NOT APPLICABLE	

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT (D-92) 700.0 DEG F
(371.1 DEG C)

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS: CARBON DIOXIDE AND
CARBON MONOXIDE, VARIOUS HYDROCARBONS

FIREFIGHTING PROCEDURES: WATER OR FOAM MAY CAUSE FROTHING WHICH CAN BE VIOLENT AND
POSSIBLY ENDANGER THE LIFE OF THE FIREFIGHTER, ESPECIALLY IF SPRAYED INTO
CONTAINERS OF HOT, BURNING LIQUID.

WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN
PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE WHEN FIGHTING FIRES.
SPECIAL FIRE & EXPLOSION HAZARD: NEVER USE WELDING OR CUTTING TORCH ON OR NEAR
DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

NFPA CODES: HEALTH- 1 FLAMMABILITY- 1 REACTIVITY- 0

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: SEE SECTION IX

EFFECTS OF ACUTE OVEREXPOSURE: FOR COMPONENT

EYES - CAN CAUSE IRRITATION.
SKIN - MAY CAUSE IRRITATION.
BREATHING - NONE CURRENTLY KNOWN.
SWALLOWING - CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA.

FIRST AID:

72-01-7001-11

MATERIAL SAFETY
DATA SHEET

VALVOLINE OIL COMPANY
DIVISION OF ASHLAND OIL INC.
P.O. BOX 391
ASHLAND, KENTUCKY 41114
(606) 329-3333

24-HOUR
EMERGENCY
TELEPHONE
(606) 324-1133

000096

VAL-FLEX EP

PAGE: 2

SECTION V-HEALTH HAZARD DATA (CONTINUED)

IF ON SKIN, THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDRY CONTAMINATED CLOTHING BEFORE RE-USE.

IF IN EYES, FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.

IF SWALLOWED, IMMEDIATELY DRINK TWO GLASSES OF WATER AND INDUCE VOMITING BY EITHER GIVING IPECAC SYRUP OR BY PLACING FINGER AT BACK OF THROAT. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION IMMEDIATELY.

IF BREATHED, REMOVE INDIVIDUAL TO FRESH AIR.

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH, STRONG OXIDIZING AGENTS.

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED.

SMALL SPILL: SWEEP UP MATERIAL ONTO PAPER.

LARGE SPILL: SHOVEL MATERIAL INTO CONTAINERS. THOROUGHLY SWEEP AREA OF SPILL TO CLEAN UP ANY RESIDUAL MATERIAL.

WASTE DISPOSAL METHOD:

SMALL SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF TLV OF THE PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH/MSHA JOINTLY APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS UNDER SPECIFIED CONDITIONS. (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS, NEOPRENE

EYE PROTECTION: WEAR SAFETY GLASSES IN COMPLIANCE WITH OSHA REGULATIONS. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTY. SINCE EMPTY CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

MATERIAL SAFETY DATA SHEET

MERIT OIL & REFINING, INC.
4150 N. Suttle Rd.
Portland, OR 97217
(503) 286-4755

PRODUCT CODE NO.: MOHO

MANUFACTURER:

MERIT OIL & REFINING, INC.
4150 N. Suttle Rd.
Portland, OR 97217

CONTACT FOR FURTHER INFORMATION:

Call in Oregon (503) 286-4755
Transportation Emergencies: CALL CHEMTREC (800)424-9300

PRODUCT IDENTIFICATION:

PRODUCT NAME	: MERIT HYDRAULIC OIL
SYNONYMS	: MERIT HYDRAULIC OIL
GENERIC NAME	: HYDRAULIC OIL
CHEMICAL FAMILY	: PETROLEUM HYDROCARBON
DOT PROPER SHIPPING NAME	: NOT APPLICABLE
ID NUMBER	: NONE

SECTION I: INGREDIENTS TLV UNITS AGENCY TYPE

OIL MIST, IF GENERATED 5.00 MG/M3 OSHA FULL TERM TWA

THE IDENTITIES OF INGREDIENTS THAT ARE TRADE SECRETS ARE EXCLUDED FROM THIS LIST.

SECTION II. EMERGENCY AND FIRST AID PROCEDURES**EYE CONTACT:**

** FOR DIRECT CONTACT. FLUSH THE AFFECTED EYE(S) WITH CLEAN WATER. IF IRRITATION OR REDNESS DEVELOPS, SEEK MEDICAL ATTENTION.

SKIN CONTACT:

** DO NOT USE GASOLINES. THINNERS OR SOLVENTS TO REMOVE PRODUCT FROM SKIN. WIPE MATERIAL FROM SKIN AND REMOVE CONTAMINATED CLOTHING. CLEANSE AFFECTED AREA(S) THOROUGHLY BY WASHING WITH SOAP AND WATER AND, IF NECESSARY, A WATERLESS SKIN CLEANSER. IF IRRITATION OR REDNESS DEVELOPS AND PERSISTS, SEEK MEDICAL ATTENTION.

INHALATION (BREATHING)

**IF IRRITATION OF NOSE OR THROAT DEVELOPS, MOVE AWAY FROM SOURCE OF EXPOSURE AND INTO FRESH AIR. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION. IF VICTIM IS NOT BREATHING OR IF BREATHING DIFFICULTIES DEVELOP, ARTIFICIAL RESPIRATION OF OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED PERSONNEL. SEEK IMMEDIATE MEDICAL ATTENTION.

MATERIAL SAFETY AND DATA SHEET
PAGE 2 OF 4

PRODUCT CODE NO.: MOHO

INGESTION (SWALLOWING):

IF VICTIM IS CONSCIOUS AND ALERT, GIVE 2 TO 3 CUPS OF MILK OR WATER TO DRINK. SEEK MEDICAL ATTENTION. TO PHYSICIAN: EMESIS OR LAVAGE IS NOT RECOMMENDED FOR INGESTIONS OF MINUTE QUANTITIES OR TASTES OF MOST HYDROCARBONS. MEDICAL OPINION IS DIVIDED FOR LARGER INGESTIONS. EMESIS OR LAVAGE HAS BEEN RECOMMENDED FOR THOSE PETROLEUM PRODUCTS WHICH HAVE A HIGH ORAL TOXICITY. GASTRIC LAVAGE WITH A CUFFED ENDOTRACHEAL TUBE IS RECOMMENDED BY SOME PHYSICIANS TO PREVENT ASPIRATION.

SECTION III: POTENTIAL ADVERSE HEALTH EFFECTS**EYE CONTACT:**

THIS MATERIAL MAY CAUSE EYE IRRITATION. DIRECT CONTACT MAY CAUSE BURNING, TEARING AND REDNESS.

SKIN CONTACT:

THIS MATERIAL MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE REDNESS, BURNING AND DERMATITIS.

INHALATION (BREATHING)

EXPOSURE TO MISTS, OR PROLONGED OR REPEATED EXPOSURE TO FUMES OR VAPORS THAT MAY BE GENERATED WHEN THIS MATERIAL IS HEATED, MAY CAUSE IRRITATION OF NOSE AND THROAT.

INGESTION (SWALLOWING)

ACCIDENTAL INGESTION OF THIS MATERIAL MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT.

COMMENTS:

USED MOTOR OIL: FOLLOWING REPEATED SKIN APPLICATIONS, ANIMAL STUDIES HAVE SHOWN THAT USED MOTOR/CRANKCASE OILS HAVE CAUSED AN INCREASED INCIDENCE OF SKIN CANCER IN MICE. IT IS THEREFORE RECOMMENDED THAT PROLONGED OR REPEATED CONTACT WITH MOTOR/CRANKCASE OILS BE AVOIDED.

SECTION IV: SPECIAL PROTECTION INFORMATION**VENTILATION:**

IF CURRENT VENTILATION PRACTICES ARE NOT ADEQUATE IN MAINTAINING AIRBORNE CONCENTRATIONS BELOW THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I), ADDITIONAL VENTILATION OR EXHAUST SYSTEMS MAY BE REQUIRED.

RESPIRATORY PROTECTION:

IF AIRBORNE CONCENTRATIONS EXCEED RECOMMENDED EXPOSURE LIMITS, A SUITABLE FILTER-TYPE RESPIRATOR SHOULD BE WORN. (SEE SECTION I.)

PROTECTIVE GLOVES:

THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.

EYE PROTECTION:

APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.

MATERIAL SAFETY AND DATA SHEET

PAGE 3 OF 4

PRODUCT CODE NO.: MOHO

OTHER PROTECTIVE EQUIPMENT:

IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. BARRIER CREAMS THAT ARE SPECIFIC FOR OIL-BASED MATERIAL ARE RECOMMENDED WHEN GLOVES ARE IMPRACTICAL.

SECTION V: REACTIVITY DATA

STABILITY:

STABLE

INCOMPATIBILITY (MATERIALS TO AVOID):

AVOID CONTACT WITH STRONG OXIDIZING AGENTS. EXTENDED EXPOSURE TO HIGH TEMPERATURES MAY CAUSE DECOMPOSITION.

HAZARDOUS DECOMPOSITION PRODUCTS:

THERMAL DECOMPOSITION IN THE PRESENCE OF AIR MAY YIELD MAJOR AMOUNTS OF OXIDES OF CARBON AND MINOR AMOUNTS OF OXIDES OF NITROGEN, PHOSPHORUS, SULFUR AND ZINC.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR.

SECTION VI: SPILL OF LEAK PROCEDURES

(HIGHWAY OR RAILWAY SPILLS, CALL CHEMTREC 800-424-9300 IN CONT. US)

PRECAUTIONS IN CASE OF RELEASE OR SPILL:

COLLECT LEAKING LIQUID IN SEALABLE CONTAINERS. ABSORB SPILLED LIQUID IN SAND OR INERT ABSORBANT. CONTACT FIRE AUTHORITIES AND APPROPRIATE STATE/LOCAL AGENCIES. IF SPILL OF ANY AMOUNT IS MADE INTO OR UPON U.S. NAVIGABLE WATERS, THE CONTIGUOUS ZONE, OR ADJOINING SHORELINES, NOTIFY COAST GUARD NATIONAL RESPONSE CENTER (PHONE NUMBER 800-424-8802).

WASTE DISPOSAL METHOD:

DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

SECTION VII: STORAGE AND SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:

STORE IN A COOL, DRY LOCATION. KEEP AWAY FROM INCOMPATIBLE MATERIALS (SEE SECTION V). AVOID GENERATING OIL MISTS WHILE HANDLING. AVOID PROLONGED OR REPEATED SKIN CONTACT. WASH THOROUGHLY AFTER HANDLING. FOR USED MOTOR OIL: LAUNDER SATURATED CLOTHING BEFORE WEARING AND DISCARD OIL-SOAKED SHOES AND UNWASHABLE CLOTHING.

SECTION VIII: FIRE AND EXPLOSION HAZARD DATA

HAZARD RANKING

(0= LEAST, 1= SLIGHT, 2= MODERATE, 3= HIGH, 4= EXTREME)

NFPA HAZARD CLASS:

HEALTH HAZARD: 0,

FLAMMABILITY: 1

REACTIVITY: 0,

OTHER: NONE

PRODUCT CODE NO.: MOHO

DOT FLAMMABILITY CLASSIFICATION: NOT REGULATED

FLASH POINT: 390-400, COC F

EXTINGUISHING MEDIA:

EXTINGUISH WITH DRY CHEMICAL, CO2, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.

FIRE & EXPLOSION HAZARDS:

THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:

WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINERS EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSES. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

SECTION IX: PHYSICAL DATA

<u>APPROX BOILING POINT</u> ABOVE 600 F (316 C)	<u>VAPOR DENSITY</u> HEAVIER THAN AIR	<u>EVAPORATION RATE</u> SLOWER THAN ETHER	<u>% VOLATILE</u> NEGLECTIBLE
<u>% SOLUBILITY IN WATER</u> NEGLECTIBLE	<u>SPECIFIC GRAVITY</u> 0.89-0.91	<u>APPEARANCE</u> CLEAR BROWN LIQUID	<u>ODOR</u> CHARACTERISTIC

SECTION X: PRECAUTIONARY LABEL

CAUTION: USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADEQUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

SECTION XI: DOCUMENTARY INFORMATION

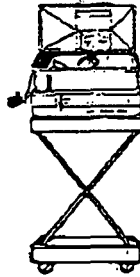
ISSUE DATE: Jan. 26, 1993 PRODUCT CODE NUMBER.: MOHO

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

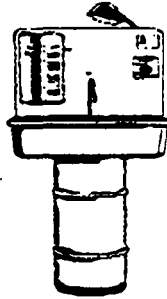
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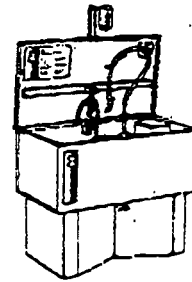
RECYCLED SOLVENT USED AT COLUMBIA FORGE



Model 14 & 60



Model 16 & 30



Model 34 & 44, COMS, and
other

Material Safety Data Sheet

Safety-Kleen 105 Solvent

Part #

6617

SK 105 Solvent; Revision 12/90; Form Part No. 82310

SAFETY-KLEEN 105 SOLVENT**MATERIAL SAFETY DATA SHEET FOR U.S.A. AND CANADA****SECTION I - PRODUCT INFORMATION**

Safety-Kleen Corp. - 777 Big Timber Road - Elgin, IL, U.S.A. 60123
 Safety-Kleen Canada Inc. - 3090 Blvd. Le Carrefour - Suite 300 - Chomedey Laval Quebec, Canada H7T 2J7
 For Product Technical Information Call 312-694-2700 (U.S.A.);
 800-363-2260 (Eastern Canada); 514-686-2040 (Western Provinces/Call Collect)

24-HOUR EMERGENCY TELEPHONE

These numbers are for emergency use only. If you desire non-emergency information about this product, please call a telephone number listed above.

MEDICAL:

800-752-7869 (U.S.A.)
 312-942-5969 (CANADA)
 RUSH POISON CONTROL CENTER
 CHICAGO, ILLINOIS, U.S.A.

TRANSPORTATION:

708-888-4660 (U.S.A.)
 SAFETY-KLEEN ENVIRONMENT,
 HEALTH AND SAFETY DEPARTMENT
 613-996-6666 (CANADA)
 CANUTEC

IDENTITY (TRADE NAME): SAFETY-KLEEN 105 SOLVENT
SYNONYMS: PETROLEUM DISTILLATES, PETROLEUM NAPHTHA,
 MINERAL SPIRITS, STODDARD SOLVENT
SK PART NUMBER: 6617
FAMILY/CHEMICAL NAME: HYDROCARBON SOLVENT
PRODUCT USAGE: SOLVENT FOR CLEANING AND DEGREASING PARTS

SECTION II - HAZARDOUS COMPONENTS

NAME	SYNONYM	Wt. %	CAS NO.	OSHA PEL		ACGIH TLV		LD50 ^a	LC50 ^b
				TWA (ppm)	STEL (ppm)	TWA (ppm)	STEL (ppm)		
Parts Washer Solvent (Consists predominantly of C9-C13 Saturated Hydrocarbons)	Mineral Spirits	85.0	64741-41-9	100 **	N.Av.	100 **	N.Av.	> 5000**	3400**
C8+ Aromatics		12.0	Mixture	N.Av.	N.Av.	N.Av.	N.Av.	N.Av.	N.Av.
*Toluene		0.5	108-88-3	100	150	100	150	5000	4000
*Xylene		1.0	1330-20-7	100	150	100	150	4300	5000
*Ethyl Benzene		0.5	100-41-4	100	125	100	125	3500	4000 ^c
*1,1,1 Trichloroethane	Methyl Chloroform	0-0.5***	71-55-6	350	450	350	450	10300	18000
*Perchloroethylene	Tetrachloroethylene	0-0.5***	127-18-4	25	N.Av.	50	200	2629	4000 ^c
Total Chlorinated Solvents		0-1.0***							

N.Av. = Not available.

* See Section X - Other Regulatory Information

** For Stoddard Solvent

*** Even though the concentration range does not fall under the ranges prescribed by WHMIS, this is the actual range which varies with each batch of the product.

^a Oral-Rat LD50 (mg/kg)

^b Inhalation-Rat LC50 (ppm/4 hours)

^c Inhalation-Rat LCLo (ppm/4 hours)

SECTION III -- PHYSICAL DATA

PHYSICAL STATE, APPEARANCE AND ODOR:	Combustible liquid, clear, green, with characteristic hydrocarbon odor.
ODOR THRESHOLD:	Not available.
BOILING POINT:	304-435°F (151-224°C).
VAPOR PRESSURE:	2 mm Hg at 68°F (20°C).
FREEZING POINT:	Not available.
EVAPORATION RATE:	0.1 (Butyl Acetate = 1).
VOLATILE:	99.9%
VOLATILE ORGANIC COMPOUNDS:	6.4 to 6.7 lbs/gal; 770 to 800 g/l
DENSITY:	Not available.
VAPOR DENSITY:	4.9 (Air = 1).
SOLUBILITY IN WATER:	Negligible.
pH:	Not applicable.
SPECIFIC GRAVITY:	0.77 to 0.80 at 60/60°F (16/16°C) (Water = 1).
COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not available.
MOLECULAR WEIGHT:	142 (Approximately).

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	105°F (41°C) SETA
AUTOIGNITION TEMPERATURE:	473°F (245°C).
CONDITIONS OF FLAMMABILITY:	Materials must be moderately heated before ignition can occur.
FLAMMABLE LIMITS IN AIR:	LOWER: 0.7 Vol. % UPPER: 6.0 Vol. %
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Decomposition and combustion products may be toxic. Heated containers may rupture, explode or be thrown into the air. Vapors are heavier than air and may travel great distances to ignition source and flash back. Not sensitive to mechanical impact. Material may be sensitive to static discharge, which could result in fire or explosion.
EXTINGUISHING MEDIA:	Carbon dioxide, foam, dry chemical, water (mist only).
FIRE FIGHTING PROCEDURES -- SPECIAL:	NEPA 704 Rating 0-2-0 Keep storage containers cool with water spray. Use self-contained breathing apparatus (SCBA).
HAZARDOUS COMBUSTION PRODUCTS:	Thermal decomposition and burning may produce carbon monoxide.

REMOVING FROM SKIN:
(Breathing)

Remove as much as immediately. Use oxygen if there is difficulty breathing or artificial respiration if breathing has stopped. Do not leave victim unattended. Seek immediate medical attention if necessary.

INGESTION:
(Swallowing)

If conscious, drink 4 to 8 ounces of water and seek immediate medical attention. DO NOT induce vomiting.

SECTION VIII - PRECAUTIONS FOR SAFE USE AND HANDLING AND PREVENTIVE MEASURES

SPILL PROCEDURES:

Remove all ignition sources. Ventilate area and avoid breathing vapors. For large spills, isolate area and deny entry. If possible, contain as a liquid for possible re-refining. Absorb with compatible absorbent material. Shovel into closable container for disposal. Wear protective equipment specified in Section IX. Contain away from surface waters and sewers.

WASTE DISPOSAL METHODS:

Dispose in accordance with Federal, State, Provincial and local regulations. Contact Safety-Kleen regarding recycling or proper disposal.

HANDLING PRECAUTIONS:

Avoid contact with eyes, skin or clothing. Use in well ventilated area and avoid breathing vapors or mists. Keep away from heat, sparks and flames.

SHIPPING AND STORING PRECAUTIONS:

Keep container tightly closed when not in use and during transport. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, grind or expose containers to flame or other sources of ignition.

PERSONAL HYGIENE:

Use good personal hygiene. Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco products. Launder contaminated clothing and clean protective equipment before reuse.

SECTION IX - CONTROL MEASURES AND OTHER PREVENTIVE MEASURES

EYE PROTECTION:

Where there is likelihood of spill or splash, wear chemical goggles and faceshield. Contact lenses should not be worn.

PROTECTIVE GLOVES:

Use nitrile or neoprene gloves to prevent contact with skin.

RESPIRATORY PROTECTION:

Use NIOSH/MSHA-approved respiratory protective equipment when concentration of vapors or mists exceeds applicable exposure limit. Depending on the airborne concentration, use a respirator or gas mask with appropriate cartridges and canisters. A self-contained breathing apparatus (SCBA) is required for large spills and emergencies. Selection and use of respiratory protective equipment should be in accordance in the U.S.A. with OSHA General Industry Standard 29 CFR 1910.134 and in Canada with CSA Standard Z94.4-M1982.

ENGINEERING CONTROLS:

Provide local exhaust or general dilution ventilation needed to maintain concentrations of vapors or mists below applicable exposure limits. Where explosive mixtures may be present, systems safe for such locations should be used.

OTHER PROTECTIVE EQUIPMENT:

Wear appropriate solvent-resistant boots, apron or other protective clothing where spills and splashes are possible. A source of clean water should be available in work areas for flushing the eyes and skin.

SECTION X - OTHER REGULATORY INFORMATION

DOT PROPER SHIPPING NAME: PETROLEUM NAPHTHA

DOT CLASS: COMBUSTIBLE LIQUID

DOT ID NUMBER: UN1255

SARA TITLE III:

Product contains toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Toxic constituents are listed with an asterisk in Section II of this Material Safety Data Sheet.

Product poses the following physical and/or health hazards as defined in 40 CFR 370.3 (Sections 311, 312 of SARA Title III):

Immediate (Acute) Health Hazard
Delayed (Chronic) Health Hazard
Fire Hazard

TDGA:

NAPHTHA, PETROLEUM
CLASS 3.3, UN1255, P.G. III

WHMIS CLASSIFICATION:

Class B3, Combustible Liquid;
Class D2A, Other Toxic Effects, Very Toxic Material;
Class D2B, Other Toxic Effects, Toxic Material

SECTION XI - PREPARATION INFORMATION

PREPARED BY: Product MSDS Coordinator

FORM PART NO. 82310

ORIGINAL ISSUE DATE: July 20, 1989

REVISED: December 14, 1990

SUPERSEDES: March 12, 1990

User assumes all risks incident to the use of this product. To the best of our knowledge, the information contained herein is accurate. However, Safety-Kleen assumes no liability whatsoever for the accuracy or completeness of the information contained herein. No representations or warranties, either expressed or implied, or merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information or the product to which information refers. The data contained on this sheet apply to the material as supplied to the user.

MATERIAL SAFETY DATA SHEET

FUEL PROCESSORS INCORPORATED

P.O. Box 1407

Woodland, WA 98074

(503)-286-8352 (Oregon)

(206)-225-6571 (Washington)

PRODUCT CODE NO.: MOAEO

MANUFACTURER:

FUEL PROCESSORS INCORPORATED

P.O. Box 1407

Woodland, WA 98074

CONTACT FOR FURTHER INFORMATION:

Call in Oregon (503)-286-8352

Call in Washington (206)-225-6571

Transportation Emergencies:

CALL CHEMTREC at (800)-424-9300 in continental U.S.

PRODUCT IDENTIFICATION:

PRODUCT NAME	: MERIT ALL ENGINE OIL 10 - 30
SYNONYMS	: MERIT ALL ENGINE OIL
GENERIC NAME	: CRANKCASE OIL
CHEMICAL FAMILY	: PETROLEUM HYDROCARBON
DOT PROPER SHIPPING NAME	: NOT APPLICABLE
ID NUMBER	: NONE

SECTION I: INGREDIENTS **TLV** **UNITS** **AGENCY** **TYPE**

OIL MIST, IF GENERATED	5.00	MG/M3	OSHA	FULL TERM TWA
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THE IDENTITIES OF INGREDIENTS THAT ARE TRADE SECRETS ARE EXCLUDED FROM THIS LIST.

SECTION II: EMERGENCY AND FIRST AID PROCEDURES**EYE CONTACT:**

FOR DIRECT CONTACT, FLUSH THE AFFECTED EYE(S) WITH CLEAN WATER. IF IRRITATION OR REDNESS DEVELOPS, SEEK MEDICAL ATTENTION.

SKIN CONTACT:

DO NOT USE GASOLINES, THINNERS OR SOLVENTS TO REMOVE PRODUCT FROM SKIN. WIPE MATERIAL FROM SKIN AND REMOVE CONTAMINATED CLOTHING. CLEANSE AFFECTED AREA(S) THOROUGHLY BY WASHING WITH SOAP AND WATER AND, IF NECESSARY, A WATERLESS SKIN CLEANSER. IF IRRITATION OR REDNESS DEVELOPS AND PERSISTS, SEEK MEDICAL ATTENTION.

INHALATION (BREATHING)

IF IRRITATION OF NOSE OR THROAT DEVELOPS, MOVE AWAY FROM SOURCE OF EXPOSURE AND INTO FRESH AIR. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION. IF VICTIM IS NOT BREATHING OR IF BREATHING DIFFICULTIES DEVELOP, ARTIFICIAL RESPIRATION OF OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED PERSONNEL. SEEK IMMEDIATE MEDICAL ATTENTION.

MATERIAL SAFETY AND DATA SHEET
PAGE 2 OF 4

PRODUCT CODE NO.: MOAEO

INGESTION (SWALLOWING):

IF VICTIM IS CONSCIOUS AND ALERT, GIVE 2 TO 3 CUPS OF MILK OR WATER TO DRINK. SEEK MEDICAL ATTENTION. TO PHYSICIAN: EMESIS OR LAVAGE IS NOT RECOMMENDED FOR INGESTIONS OF MINUTE QUANTITIES OR TASTES OF MOST HYDROCARBONS. MEDICAL OPINION IS DIVIDED FOR LARGER INGESTIONS. EMESIS OR LAVAGE HAS BEEN RECOMMENDED FOR THOSE PETROLEUM PRODUCTS WHICH HAVE A HIGH ORAL TOXICITY. GASTRIC LAVAGE WITH A CUFFED ENDOTRACHEAL TUBE IS RECOMMENDED BY SOME PHYSICIANS TO PREVENT ASPIRATION.

SECTION III: POTENTIAL ADVERSE HEALTH EFFECTS**EYE CONTACT:**

THIS MATERIAL MAY CAUSE EYE IRRITATION. DIRECT CONTACT MAY CAUSE BURNING, TEARING AND REDNESS.

SKIN CONTACT:

THIS MATERIAL MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE REDNESS, BURNING AND DERMATITIS.

INHALATION (BREATHING)

EXPOSURE TO MISTS, OR PROLONGED OR REPEATED EXPOSURE TO FLAMES OR VAPORS THAT MAY BE GENERATED WHEN THIS MATERIAL IS HEATED, MAY CAUSE IRRITATION OF NOSE AND THROAT.

INGESTION (SWALLOWING)

ACCIDENTAL INGESTION OF THIS MATERIAL MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT.

COMMENTS:

USED MOTOR OIL: FOLLOWING REPEATED SKIN APPLICATIONS, ANIMAL STUDIES HAVE SHOWN THAT USED MOTOR/CRANKCASE OILS HAVE CAUSED AN INCREASED INCIDENCE OF SKIN CANCER IN MICE. IT IS THEREFORE RECOMMENDED THAT PROLONGED OR REPEATED CONTACT WITH MOTOR/CRANKCASE OILS BE AVOIDED.

SECTION IV: SPECIAL PROTECTION INFORMATION**VENTILATION:**

IF CURRENT VENTILATION PRACTICES ARE NOT ADEQUATE IN MAINTAINING AIRBORNE CONCENTRATIONS BELOW THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I), ADDITIONAL VENTILATION OR EXHAUST SYSTEMS MAY BE REQUIRED.

RESPIRATORY PROTECTION:

IF AIRBORNE CONCENTRATIONS EXCEED RECOMMENDED EXPOSURE LIMITS, A SUITABLE FILTER-TYPE RESPIRATOR SHOULD BE WORN. (SEE SECTION I.)

PROTECTIVE GLOVES:

THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.

EYE PROTECTION:

APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.

MATERIAL SAFETY AND DATA SHEET
PAGE 3 OF 4

PRODUCT CODE NO.: MOAEO

OTHER PROTECTIVE EQUIPMENT:

IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. BARRIER CREAMS THAT ARE SPECIFIC FOR OIL-BASED MATERIAL ARE RECOMMENDED WHEN GLOVES ARE IMPRACTICAL.

SECTION V: REACTIVITY DATA**STABILITY:**

STABLE

INCOMPATIBILITY (MATERIALS TO AVOID):

AVOID CONTACT WITH STRONG OXIDIZING AGENTS. EXTENDED EXPOSURE TO HIGH TEMPERATURES MAY CAUSE DECOMPOSITION.

HAZARDOUS DECOMPOSITION PRODUCTS:

THERMAL DECOMPOSITION IN THE PRESENCE OF AIR MAY YIELD MAJOR AMOUNTS OF OXIDES OF CARBON AND MINOR AMOUNTS OF OXIDES OF NITROGEN, PHOSPHORUS, SULFUR AND ZINC.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR.

SECTION VI: SPILL OR LEAK PROCEDURES

(HIGHWAY OR RAILWAY SPILLS, CALL CHEMTREC 800-424-9300 IN CONT. US)

PRECAUTIONS IN CASE OF RELEASE OR SPILL:

COLLECT LEAKING LIQUID IN SEALABLE CONTAINERS. ABSORB SPILLED LIQUID IN SAND OR INERT ABSORBANT. CONTACT FIRE AUTHORITIES AND APPROPRIATE STATE/LOCAL AGENCIES. IF SPILL OF ANY AMOUNT IS MADE INTO OR UPON U.S. NAVIGABLE WATERS, THE CONTIGUOUS ZONE, OR ADJOINING SHORELINES, NOTIFY COAST GUARD NATIONAL RESPONSE CENTER (PHONE NUMBER 800-424-8802).

WASTE DISPOSAL METHOD:

DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

SECTION VII: STORAGE AND SPECIAL PRECAUTIONS**HANDLING AND STORAGE PRECAUTIONS:**

STORE IN A COOL, DRY LOCATION. KEEP AWAY FROM INCOMPATIBLE MATERIALS (SEE SECTION V). AVOID GENERATING OIL MISTS WHILE HANDLING. AVOID PROLONGED OR REPEATED SKIN CONTACT. WASH THOROUGHLY AFTER HANDLING. FOR USED MOTOR OIL: LAUNDER SATURATED CLOTHING BEFORE WEARING AND DISCARD OIL-SOAKED SHOES AND UNWASHABLE CLOTHING.

SECTION VIII: FIRE AND EXPLOSION HAZARD DATA**HAZARD RANKING**

(0= LEAST, 1= SLIGHT, 2= MODERATE, 3= HIGH, 4= EXTREME)

NFPA HAZARD CLASS:

HEALTH HAZARD: 0,

FLAMMABILITY: 1

REACTIVITY: 0,

OTHER: NONE

MATERIAL SAFETY AND DATA SHEET
PAGE 4 OF 4

PRODUCT CODE NO.: MOAEO

DOT FLAMMABILITY CLASSIFICATION: NOT REGULATED
FLASH POINT: 390-400 COC F**EXTINGUISHING MEDIA:**

EXTINGUISH WITH DRY CHEMICAL, CO2, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.

FIRE & EXPLOSION HAZARDS:

THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:

WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINERS EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSES. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

SECTION IX: PHYSICAL DATA

<u>APPROX BOILING POINT</u> ABOVE 600 F (316 C)	<u>VAPOR DENSITY</u> HEAVIER THAN AIR	<u>EVAPORATION RATE</u> SLOWER THAN ETHER	<u>% VOLATILE</u> NEGLECTIBLE
<u>% SOLUBILITY IN WATER</u> NEGLECTIBLE	<u>SPECIFIC GRAVITY</u> 0.89-0.91	<u>APPEARANCE</u> CLEAR, BROWN LIQUID	<u>ODOR</u> CHARACTERISTIC

SECTION X: PRECAUTIONARY LABEL

CAUTION: USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADEQUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

SECTION XI: DOCUMENTARY INFORMATION

ISSUE DATE: JULY 2 1986

PRODUCT CODE NUMBER.: MOAEO

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION. THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OF THE PRODUCT, THE SAFETY OF THIS PRODUCT OR THE HAZARDS RELATED TO ITS USE.

This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his own purpose and on the condition that he assume the risk of his use thereof.

Material Safety Data Sheet
May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)



IDENTITY (As Used on Label and List)
CIMPERIAL 1011

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name Cincinnati Milacron Marketing Company	Emergency Telephone Number 513-841-8181
Address (Number, Street, City, State, and ZIP Code) 4701 Marburg Avenue	Telephone Number for Information 513-841-8964
City, State, and ZIP Code Cincinnati, Ohio 45209	Date Prepared 10/85
Signature of Preparer (optional)	

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
O-phenylphenol	---	---		
Triethanolamine	---	---		
Ethoxylated nonylphenol	---	---		
Mineral oil (mist)	5 mg/M3	5 mg/M3		

The ingredients listed above may contribute to the product hazard as listed in Section VI of this sheet.

Section III — Physical/Chemical Characteristics

ND = not determined

Boiling Point	ND	Specific Gravity (H₂O = 1)	1.006
Vapor Pressure (mm Hg.)	NA	Melting Point	NA
Vapor Density (AIR = 1)	NA	Evaporation Rate (Butyl Acetate = 1)	NA
Solubility in Water	appreciable; emulsifiable		

Appearance and Odor

Hazy; evergreen or sassafras

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) 370°F (COC)	Flammable Limits NA	LEL NA	UEL NA
Extinguishing Media Foam, carbon dioxide			
Special Fire Fighting Procedures NA			

Usual Fire and Explosion Hazards
None

Section V — Reactivity Data

CIMPRIAL 1011

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid)

None known

Hazardous Decomposition or Byproducts

None.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	YES	Skin?	YES	Ingestion?	NA
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Health Hazards (Acute and Chronic)

WARNING: Concentrate is alkaline. Harmful if taken internally. Concentrate is an eye irritant. Eye damage may occur from contact with concentrate. No adverse chronic effects expected when used as recommended.

Carcinogenicity:	NTP?	NO	IARC Monographs?	NO	OSHA Regulated?	NO
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Signs and Symptoms of Exposure Eye damage may occur from contact with concentrate. This product is not a primary skin irritant; however, skin irritation may occur if used improperly (concentrate or mix).

Medical Conditions Generally Aggravated by Exposure May aggravate existing skin irritation where further defatting or skin penetration could occur.

Emergency and First Aid Procedures In case of eye contact, flush immediately with running water for 15 minutes, then get prompt medical attention to check for possible irritation. In case of skin contact with concentrate, wash immediately with water. If concentrate or mix is swallowed, do not induce vomiting. Dilute with water or milk. Immediately contact physician and obtain treatment.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

Thoroughly flush with water to sewer.

Waste Disposal Method Ultrafiltration or acid-alum-polymer chemical treatment (followed by phenol-removing procedures, if required), or high temperature incineration.

Precautions to Be Taken in Handling and Storing Use only as recommended by Cincinnati Milacron. Avoid all contact of concentrate with eyes or prolonged contact with skin. Do not swallow. Avoid open flames, sparks, and temperatures over 370°F. If frozen, thaw completely at room temp.

Other Precautions

Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

Section VIII — Control Measures

Respiratory Protection (Specify Type)

Product not volatile.

Ventilation	Local Exhaust		Special
	Mechanical (General)	General	Other

Protective Gloves Waterproof gloves required when handling concentrate.

Eye Protection Safety shield or goggles required when handling concentrate.

Other Protective Clothing or Equipment

Effective metalworking plant protective clothing as appropriate.

Work/Hygenic Practices

Good personal hygiene should always be followed.



4150 N. Suttle Rd. • Portland, OR 97217
(503) 286-8352 1-800-367-8894
Fax: (503) 286-5027

MATERIAL SAFETY DATA SHEET

AERO SOLUBLE OIL

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated into your MSDS.

1. PRODUCT IDENTIFICATION

AERO SOLUBLE OIL

CAUTION ! - MAY CAUSE EYE IRRITATION

- MAY BE HARMFUL IF SWALLOWED
 - KEEP OUT OF REACH OF CHILDREN
-

2. FIRST AID

EYE CONTACT:

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary, however, if irritation persists, see a doctor.

SKIN CONTACT:

No first aid procedures are normally required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

AERO SOLUBLE OIL

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS

EYE CONTACT:

The eye irritation potential of this substance has not been determined. However, it may be slightly irritating to the eyes and could cause prolonged (days) impairment of your vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, swelling, redness, and blurred vision. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on the data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials. Read the Additional Health Data section (12) of this document for more information.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The oral toxicity of this substance has not been determined. However, it may be slightly toxic to internal organs if swallowed. The degree of injury will depend on the amount absorbed from the gut. This hazard evaluation is based on the known toxicity of the ingredients in this substance. Read the Additional Health Data section (12) of this document for more information.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

Do not get this material in your eyes. Eye contact can be avoided by wearing chemical goggles.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

AERO SOLUBLE OIL

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 320F (160C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): NDA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; Special NDA

HMIS RATINGS: Health 1; Flammability 1; Reactivity 0; Other NDA;

(Least = 0, Slight = 1, Moderate = 2, High = 3, Extreme = 4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coatings Association.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Avoid contact with nitrites.

SPECIAL PRECAUTIONS:

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

DO NOT WELD, HEAT OR DRILL CONTAINER! Residue may ignite with explosive violence if heated sufficiently. **CAUTION!** Do not use pressure to empty drum or explosion may result.

AERO SOLUBLE OIL

7. PHYSICAL PROPERTIES

SOLUBILITY: Forms a stable emulsion with water.

APPEARANCE: Pale lemon yellow liquid.

BOILING POINT: NDA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.91 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 28 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour)

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases. However, because of its dispersant properties, this material forms emulsions with water.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m³, the OSHA PEL is 5 mg/m³.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

AERO SOLUBLE OIL**PERCENT/CAS# COMPONENT/REGULATORY LIMITS**

100.0 % AERO SOLUBLE OIL

CONTAINING

> 80.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 20.0 % ADDITIVES, INCLUDING THE FOLLOWING

CAS111762 ETHANOL, 2-BUTOXY
25ppm ACGIH TLV
25ppm OSHA PEL

CAS107415 2-METHYL-2,4-PENTANEDIOL
25ppm ACGIH TLV

TLV - THRESHOLD LIMIT VALUE

STEL - Short-term Exposure Limit

RQ - Reportable Quantity

TWA - Time Weighted Average

CAS - Threshold Planning Quantity

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT. Petroleum Lubricating Oil, NOIBN

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:	1. Immediate (Acute) Health Effects;	YES
	2. Delayed (Chronic) Health Effects;	NO
	3. Fire Hazard;	NO
	4. Sudden Release of Pressure Hazard;	NO
	5. Reactivity Hazard;	NO

WHEN A COMPONENT OF THIS MATERIAL IS SHOWN IN THIS SECTION, THE
REGULATORY LIST ON WHICH IT APPEARS IS INDICATED.

2-METHYL-2,4-PENTANEDIOL	02,10,14,28
ETHANOL, 2-BUTOXY	02,10,14,17,25,26,28

AERO SOLUBLE OIL

REGULATORY LISTS SEARCHED:

01 = SARA 313	02 = MASS RTK	03 = NTP carcinogen
04 = CA Prop. 65	05 = MI 406	06 = IARC Group 1
07 = IARC Group 2A	08 = IARC Group 2B	09 = SARA 302/304
10 = PA RTK	11 = NJ RTK	12 = CERCLA 302.4
13 = MN RTK	14 = ACGIH TLV	15 = ACGIH STEL
16 = ACGIH Calculated TLV	17 = OSHA TWA	18 = OSHA STEL
19 = EPA Carcinogen	20 = TSCA Sect 4(c)	21 = TSCA Sect 5 (a) (e) (f)
22 = TSCA Sect 6	23 = TSCA Sect 12 (b)	24 = TSCA Sect 8 (a)
25 = TSCA 8 (d)	26 = TSCA 8 (e)	27 = Canadian WHMIS
28 = OSHA CEILING	29 = TSCA Sect 8 FYI	

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

NDA. The hazard evaluation was based on data on the components.

SKIN IRRITATION:

NDA. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

NDA. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

NDA. The hazard evaluation was based on data from similar materials.

INGESTION:

NDA. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Data Sheet

Date last revised 03/08/88



I. General Information

Chemical Name & Synonyms	ORGANIC ESTERS	Trade Name & Synonyms	LUBRIFORGE 20-NP
Chemical Family	POLYMERS	Formula	WATER SOLUBLE POLYMERS
Proper DOT Shipping Name	SAME	DOT Hazard Classification	NONE
Manufacturer	MICHIGAN INDUSTRIAL PRODUCTS COMPANY	Manufacturer's Phone Number	313-985-4545
Manufacturer's Address	301 16TH ST., PORT HURON, MI 48060	Chemtrec Phone Number	N/A

II. Ingredients

Principal Hazardous Components	Percent	Threshold Limit Value (units)
0 HAZARDOUS INGREDIENTS		

III. Physical Data

Boiling Point (°F)	220°F	Specific Gravity (H ₂ O = 1)	1.10
Vapor Pressure (mm Hg.)	<760 MM	Percent Volatile By Volume (%)	82.0
Vapor Density (Air = 1)	0.62	Evaporation Rate (WATER = 1)	0.75
Solubility in Water	COMPLETE	pH	
Appearance & Odor	OILY BROWN - BLAND		

IV. Fire & Explosion Hazard Data

Flash Point (Test Method)	NONE	Auto Ignition Temperature	NONE
Flammable Limits	NONE	LEL	NONE
Extinguishing Media	NOT NEEDED	UEL	NONE
Special Fire Fighting Procedures	NOT NEEDED		
Usual Fire & Explosion Hazards	NONE		

301 Sixteenth Street, Port Huron, Michigan 48060 (313) 985-4545

138-F

CRAW00014550

Attachment for Response to DEQ Comment 6 and 9

This MSDS should be attached or kept with the respective product with which it is associated.

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SECTION 6 - ACCIDENTAL RELEASE MEASURES

MATERIAL SAFETY DATA SHEET

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: NO INFORMATION

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SECTION 7 - HANDLING AND STORAGE

PRODUCT NAME : INDUSTRIAL PURE STRENGTH-SPRAY

IDENTIFICATION NUMBER: 3599 838

DATE PRINTED : 12-11-97

PRODUCT USE/CLASS : CLEANER/DEGREASER

HANDLING: WASH THOROUGHLY AFTER HANDLING. FOLLOW ALL MSDS/LABEL

PRECAUTIONS EVEN AFTER CONTAINER IS EMPTY BECAUSE IT MAY RETAIN PRODUCT RESIDUES.

STORAGE: KEEP AWAY FROM HEAT, SPARKS, FLAME AND SOURCES OF IGNITION.

SUPPLIER:

RUST-OLEUM CORPORATION
11 HANTHORN PARKWAY
VERNON HILLS, ILLINOIS
60061 USA

MANUFACTURER:

RUST-OLEUM CORPORATION
11 HANTHORN PARKWAY
VERNON HILLS, ILLINOIS
60061 USA

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

(847) 367-7700 RUST-OLEUM CORP.
MON.-FRI, 8:00 AM-4:30 PM

(847) 367-7700 RUST-OLEUM CORP.
MON.-FRI, 8:00 AM-4:30 PM

ENGINEERING CONTROLS: USE PROCESS ENCLOSURES, LOCAL EXHAUST VENTILATION OR OTHER ENGINEERING CONTROLS TO CONTROL AIRBORNE LEVELS BELOW RECOMMENDED EXPOSURE LIMITS. PREVENT BUILD-UP OF VAPORS BY OPENING ALL DOORS AND WINDOWS TO ACHIEVE CROSS-VENTILATION.

PREPARED: LJW, PHONE: , PREPARE DATE: 07-25-97

RESPIRATORY PROTECTION: A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

SKIN PROTECTION: USE GLOVES TO PREVENT PROLONGED SKIN CONTACT.

ITEM	CHEMICAL NAME	CAS NUMBER	WT/WT % LESS THAN
01	D-LIMONENE TECH GRADE	5989-27-5	75.0 %
02	LIQUIFIED PETROLEUM GAS	68476-85-7	30.0 %

EYE PROTECTION: USE SAFETY EYEWEAR DESIGNED TO PROTECT AGAINST SPLASH OF LIQUIDS.

EXPOSURE LIMITS

OTHER PROTECTIVE EQUIPMENT: REFER TO SAFETY SUPERVISOR OR INDUSTRIAL HYGIENIST FOR FURTHER INFORMATION REGARDING PERSONAL PROTECTIVE EQUIPMENT AND ITS APPLICATION.

ITEM	ACGIH		OSHA		COMPANY	
	TLV-TWA	TLV-STEL	PEL-TWA	PEL-CILING	TLV-TWA	STEL
01	N.E.	N.E.	N.E.	N.E.	N.E.	NO
02	1000 PPM	N.E.	1000 PPM	N.E.	N.E.	NO

HYGIENIC PRACTICES: WASH THOROUGHLY WITH SOAP AND WATER BEFORE EATING, DRINKING OR SMOOKING.

(SEE SECTION 16 FOR ABBREVIATION LEGEND)

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

SECTION 3 - HAZARDS IDENTIFICATION

BOILING RANGE : -34 - 310 F VAPOR DENSITY : IS HEAVIER THAN A
ODOR : CITRUS ODOR THRESHOLD : ND
APPEARANCE : LIQUID EVAPORATION RATE: IS SLOWER THAN ET
SOLUBILITY IN H2O : N.D.
FREEZE POINT : ND SPECIFIC GRAVITY: 1.0078
VAPOR PRESSURE : ND PH AT 0.0 % : ND
PHYSICAL STATE : LIQUID VISCOSITY : ND
COEFFICIENT OF WATER/OIL DISTRIBUTION: ND

EMERGENCY OVERVIEW: DO NOT TASTE OR SWALLOW.

(SEE SECTION 16 FOR ABBREVIATION LEGEND)

EFFECTS OF OVEREXPOSURE - EYE CONTACT: CAN CAUSE SEVERE EYE IRRITATION.
IRRITATING, AND MAY INJURE EYE TISSUE IF NOT REMOVED PROMPTLY.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: CONTACT CAUSES SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. LOW HAZARD FOR USUAL INDUSTRIAL HANDLING OR COMMERCIAL HANDLING BY TRAINED PERSONNEL.

EFFECTS OF OVEREXPOSURE - INHALATION: PROLONGED OR EXCESSIVE INHALATION MAY CAUSE RESPIRATORY TRACT IRRITATION. CAUSES NOSE AND THROAT IRRITATION. BREATHING SMALL AMOUNTS DURING NORMAL HANDLING IS NOT LIKELY TO CAUSE HARMFUL EFFECTS; BREATHING LARGE AMOUNTS MAY BE HARMFUL. SYMPTOMS OF OVEREXPOSURE INCLUDE NOSE, THROAT AND RESPIRATORY TRACT IRRITATION. PRE-EXISTING LUNG DISORDERS, E.G. ASTHMA-LIKE CONDITIONS, MAY BE AGGRAVATED BY EXPOSURE TO THIS MATERIAL.

EFFECTS OF OVEREXPOSURE - INGESTION: SUBSTANCE MAY BE HARMFUL IF SWALLOWED.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: CONTAINS D-LIMONENE, WHICH IS AN IARC GROUP 3 AGENT: "PROBABLY NOT CARCINOGENIC TO HUMANS". D-LIMONENE IS NOT CLASSIFIED AS A CARCINOGEN BY OSHA, NTP NOR ACGIH.

PRIMARY ROUTE(S) OF ENTRY: SKIN CONTACT INHALATION EYE CONTACT

SECTION 4 - FIRST AID MEASURES

FIRST AID - EYE CONTACT: HOLD EYELIDS APART AND FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

FIRST AID - SKIN CONTACT: WASH WITH SOAP AND WATER. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS OR PERSISTS.

FIRST AID - INHALATION: NO INFORMATION.

FIRST AID - INGESTION: SWALLOWING LESS THAN AN OUNCE WILL NOT CAUSE SIGNIFICANT HARM. FOR LARGER AMOUNTS, DO NOT INDUCE VOMITING, BUT GIVE ONE OR TWO GLASSES OF WATER TO DRINK AND GET MEDICAL ATTENTION.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: -10 °F LOWER EXPLOSIVE LIMIT: 0.7 %
UPPER EXPLOSIVE LIMIT: 9.5 %

AUTOIGNITION TEMPERATURE: NO

EXTINGUISHING MEDIA: DRY CHEMICAL FOAM WATER FOG

USUAL FIRE AND EXPLOSION HAZARDS: NO INFORMATION.

SPECIAL FIREFIGHTING PROCEDURES: NO INFORMATION.

SECTION 10 - STABILITY AND REACTIVITY

CONDITIONS TO AVOID: AVOID ALL POSSIBLE SOURCES OF IGNITION.

INCOMPATIBILITY: INCOMPATIBLE WITH STRONG OXIDIZING AGENTS, STRONG ACID AND STRONG ALKALIES.

HAZARDOUS DECOMPOSITION PRODUCTS: BY OPEN FLAME, CARBON MONOXIDE AND CARBON DIOXIDE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR UNDER NORMAL CONDITIONS.

STABILITY: THIS PRODUCT IS STABLE UNDER NORMAL STORAGE CONDITIONS.

SECTION 11 - TOXICOLOGICAL PROPERTIES

COMPONENT TOXICOLOGICAL INFORMATION:

CHEMICAL NAME	LD50	LC50
D-LIMONENE TECH GRADE	RAY 5G/KG	N.E.
LIQUIFIED PETROLEUM GAS	N.E.	N.E.

SECTION 12 - ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: PRODUCT IS A MIXTURE OF LISTED COMPONENTS.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: DISPOSE OF MATERIAL IN ACCORDANCE TO LOCAL, STATE AND FEDERAL REGULATIONS AND ORDINANCES. DO NOT ALLOW TO ENTER STORM DRAINS SEWER SYSTEMS.

SECTION 14 - TRANSPORTATION INFORMATION

NO TRANSPORTATION INFORMATION IS AVAILABLE.

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS: AS FOLLOWS -

OSHA: HAZARDOUS BY DEFINITION OF HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

CERCLA - SARA HAZARD CATEGORY:

THIS PRODUCT HAS BEEN REVIEWED ACCORDING TO THE EPA 'HAZARD CATEGORIES' PROMULGATED UNDER SECTIONS 311 AND 312 OF THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986 (SARA TITLE III) AND IS CONSIDERED, UNDER APPLICABLE DEFINITIONS, TO MEET THE FOLLOWING CATEGORIES:

FIRE HAZARD

SARA SECTION 313:

THIS PRODUCT CONTAINS THE FOLLOWING SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372:

CHEMICAL NAME	CAS NUMBER	WT/WT % IS LESS THAN
NO SARA SECTION 313 COMPONENTS EXIST IN THIS PRODUCT.		

TOXIC SUBSTANCES CONTROL ACT:

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF TSCA 12(B) IF REPORTED FROM THE UNITED STATES:

CHEMICAL NAME	CAS NUMBER
NO INFORMATION IS AVAILABLE.	

U.S. STATE REGULATIONS: AS FOLLOWS -

NEW JERSEY RIGHT-TO-KNOW:

THE FOLLOWING MATERIALS ARE NON-HAZARDOUS, BUT ARE AMONG THE TOP FIVE COMPONENTS IN THIS PRODUCT:

CHEMICAL NAME	CAS NUMBER
ALCOHOL ETHOXYLATE MIXTURE	68439-46-3

PENNSYLVANIA RIGHT-TO-KNOW:

THE FOLLOWING NON-HAZARDOUS INGREDIENTS ARE PRESENT IN THE PRODUCT AT GREATER THAN 3%:

CHEMICAL NAME	CAS NUMBER
ALCOHOL ETHOXYLATE MIXTURE	68439-46-3

CALIFORNIA PROPOSITION 65:

WARNING: THE CHEMICAL(S) NOTED BELOW AND CONTAINED IN THIS PRODUCT, ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM:

CHEMICAL NAME	CAS NUMBER
NO PROPOSITION 65 CHEMICALS EXIST IN THIS PRODUCT.	

INTERNATIONAL REGULATIONS: AS FOLLOWS -

CANADIAN WEKIS: THIS MSDS HAS BEEN PREPARED IN COMPLIANCE WITH CONTROLLED PRODUCT REGULATIONS RECENT FOR USE OF THE 16 HEADINGS.

CANADIAN WEKIS CLASS: NO INFORMATION AVAILABLE.

SECTION 16 - OTHER INFORMATION

HAZARD RATINGS - HEALTH: 2 FLAMMABILITY: 4 REACTIVITY: 0

PREVIOUS MSDS REVISION DATE: 07-25-97

REASON FOR REVISION: REVISED MSDS.

LEGEND: N.A. - NOT APPLICABLE, N.E. - NOT ESTABLISHED,
N.D. - NOT DETERMINED

: NO INFORMATION.

THE INFORMATION CONTAINED ON THIS MSDS HAS BEEN CHECKED AND SHOULD BE
ACCURATE. HOWEVER, IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL
FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

December 30, 1997

Jalapa Gas & Chemical Corp.
P.O. Box 24159
Houston, Texas 77229-4159

MATERIAL SAFETY DATA SHEET (MSDS)

Phone numbers: Voice
Fax

(713) 643-2408
(713) 643-0771

Spill Chemtrek (800) 424-9300
(202) 483-7616 24-hrs.

A. Product Identification

Chemtane II Fabgas
Gas Mixture (for composition see B. Hazardous components)

B. Hazardous Components

Ingredients	CAS Number	OSHA PEL	ACGIH TLV
Propane	74-98-6	1000 ppm	1000 ppm
n-Butane	106-97-8	800 ppm	800 ppm
n-Pentane	109-66-0	600 ppm	600 ppm
Isohexanes	8030-30-6	NE	NE
Soltrol 100	68551-16-6	NE	NE
2,3 Dimethylbutane	79-29-8	500 ppm	500 ppm
Xylene	1330-20-7	100 ppm	100 ppm
Cyclopentane	287-92-3	600 ppm	600 ppm
2-Methylpentane	107-83-5	500 ppm	500 ppm

C. Physical/Chemical Characteristics

Boiling Point - 43.6 °F -42 °C
Specific Gravity 0.505 @ 15.6 / 15.6 °C
Vapor Pressure 218 PSI @ 37.78 °C
Evaporation Rate (Butyl Acetate = 1) 1.00
Solubility in Water Not Soluble
Appearance is Light Green
Odor - distinct Odor of Commercial Natural Gas

D. Fire and Explosion Hazard Data

Flash Point -150 °F (-101 °C) LEL 2.3% UEL 9.4%

NFPA RATINGS: Health 1; Flammability 4; Reactivity 0; Special NDA
(Least - 0, Moderate - 2, High - 3, Extremely - 4)
These values are obtained using the guidelines of published evaluations.

Extinguishing Media CO₂ foam, Dry Chemical

Special fire fighting procedures, foam, dry chemical; water is not suitable except to keep containers cool.

Unusual Fire and Explosion Hazards Pressurized containers can present explosion hazard in fire.

High volatility, heavier than air.

This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures and forms vapors (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be ignited by sources such as pilot lights, welding equipment, and electrical motors and switches.

E. Personal Protection Information

Ventilation: Use adequate ventilation to control exposure below recommended levels.

Respiratory Protection: Not generally required for concentrations not exceeding the recommended exposure level, use NIOSH/MSHA approved air purifying respirator.

Eye Protection: Use safety glasses with side shields. For splash protection use face shield and chemical goggles.

Skin Protection: Avoid unnecessary skin contamination with material. Use gloves of Neoprene or Viton construction if liquid contact could occur.

Note: Personal protection information shown in Section C is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

F. Handling and Storage Precautions

Avoid contact with eyes, skin or clothing. Avoid breathing vapors, mist, fumes or dust. Do not swallow. May be aspirated into lungs. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Wash thoroughly after handling. Launder contaminated clothing before reuse. Use with adequate ventilation.

Keep away from heat, sparks and flame. Store in well-ventilated area. Store in tightly closed container. Bond and ground during liquid transfer.

G. Reactivity Data

Stability: Stable

Conditions to Avoid: Not Applicable

Incompatibility (Materials to Avoid): Oxygen and strong oxidizing agents

Hazardous Polymerization: Will Not Occur

Conditions to Avoid: Not Applicable

Hazardous Decomposition Products: Carbon oxides formed when burned.

H. Health Hazard Data

Recommended Exposure limits
See Section B.

HEALTH HAZARD (continued)

- EXTREMELY FLAMMABLE**
- LIQUID CAN CAUSE SKIN AND EYE INJURY**
- MAY EXCLUDE OXYGEN AVAILABLE FOR BREATHING**
- LEAK DETECTION BY SENSE OF SMELL**
- CONTENTS UNDER PRESSURE**
- KEEP OUT OF REACH OF CHILDREN**

ACUTE EFFECTS OF OVEREXPOSURE:

Eye: Liquid or vapors may be mildly irritating.

Skin: Prolonged or repeated contact with the liquid may cause defatting of the skin resulting in drying, redness, and possibly blistering.

Inhalation: Vapors may be mildly irritating to lungs and mucous membranes of the nose and throat. Overexposure may cause dizziness, headache, excitation, drowsiness, incoordination, anesthesia, unconsciousness, and respiratory arrest. As an example, exposure to butane in concentration of 5000 ppm for ten minutes were found not to be irritating to the mucous membranes or to produce local or systemic effects in humans. A four hour inhalation LD50, rat, for butane (Commercial Grade) > 6100 ppm.

Ingestion: May cause effects similar to those of inhalation and gastrointestinal irritation. If swallowed, may be aspirated resulting inflammation and possible fluid accumulation in the lungs.

SUBCHRONIC AND CHRONIC EFFECTS OF OVEREXPOSURE:

No known applicable effects

OTHER HEALTH EFFECTS:

None of the components were mutagenic in the Salmonella typhimurium assay.
A Toxicity study summary for the components is available upon request.

HEALTH HAZARD CATEGORIES:

Target Organ Toxin No

FIRST AID AND EMERGENCY PROCEDURES:

Eye: Flush eyes with running water for at least fifteen minutes.
If irritation or adverse symptoms develop, seek medical attention.

Skin: Wash skin with Soap and water. If irritation or adverse symptoms develop, seek medical attention.

Inhalation: Remove from exposure. If breathing is difficult, give oxygen. If breathing ceases, administer artificial respiration followed by oxygen. Seek immediate medical attention.

Ingestion: Do not induce vomiting. Seek immediate medical attention.

Note to physician: Gastric lavage using a cuffed endotracheal tube may be performed at your discretion.

I. Physical Data

SOLUBILITY: Soluble in alcohol, ether and hydrocarbons; insoluble in water

Vapor Pressure: 218 PSI at 100 °F (37.78 °C)

Specific Gravity of Gas (compared to air) (Air = 1): 1

Solubility in Water: Negligible

Specific Gravity of Liquid (H₂O = 1): 0.505 at 60/60 °F (15.6/15.6 °C)

Percent Volatile by Volume: 100

Evaporation Rate (Butyl Acetate = 1): > NA

J. Fire and Explosion Data

Flash Point: -150 °F (-101 °C) (CC)

Flammable Limits (% by Volume in Air): LEL 2.3% UEL 9.4%

Fire Extinguishing Media: Dry Chemical, foam or carbon dioxide (CO₂)

Special Fire Fighting Procedures: Evacuate area of all unnecessary personnel. Use NIOSH/MSHA approved self-contained breathing apparatus and other protective equipment and/or garments described in Section C if exposure conditions warrant. Shut off source if possible. Water fog or spray may be used to cool exposed containers and equipment. Do not spray water directly on fire product will float and could be reignited on surface of water.

Fire and Explosion Hazards: Carbon oxides formed when burned. Highly flammable vapors which are heavier than air may accumulate in low areas and/or spread along ground away from handling site.

Flash back along vapor trail is possible.

K. Spill, Leak and Disposal Procedures

Precautions Required if Material is Released or Spilled:

Evacuate area of all unnecessary personnel. Wear Protective equipment and/or garments described in Section C if exposure conditions warrant. Shut off source if possible and contain spill. Protect from ignition. Keep out of water sources and sewers. Absorb in dry, inert material (sand, clay, etc.). Transfer to disposal drums using non-sparking equipment.

Waste Disposal (Insure Conformity with all Applicable Disposal regulations): Incinerate or otherwise manage at a RCRA permitted waste management facility.

L. DOT Transportation

DOT IDENTIFICATION NUMBER UN1954

DOT Shipping Name: Liquified Petroleum Gas

Dot Hazard Class 2.1 (Flammable Gas)

Hazardous Substance/RQ: Not Applicable

M. RCRA Classification -UNADULTERATED PRODUCT AS A WASTE

Ignitable (D001)

N Protection Required for Work on Contaminated Equipment

Contact immediate supervisor for specific instructions before work is initiated. Wear protective equipment and/or garments described in Section C if exposure conditions warrant.

O. Hazard Classification

Yes This product meets the following hazard definition(s) as defined by the Occupational Safety and Health Hazard Communication Standard (29 CFR Section 1910.1200):

Yes Combustible Liquid
No Suspect Carcinogen
No Known Carcinogen
No Allergic Sensitizer

Yes Flammable Gas
No Mutagen
No Target Organ Toxin
No Irritant

No Toxic
No Corrosive
No Teratogen
No Highly Toxic

Additional information is listed in Section R. regulatory Information. The lists which were searched are listed in section R. regulatory Information . The Carcinogenicity data was searched in IARC, NTP Carcinogen, EPA Carcinogen, and OSHA Ceiling.

Other Health Effects:

Propane, n-butane and n-pentane were nonmutagenic in the Salmonella typhimurium assay.

P. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

Chemtrek Emergency Phone (800) 424-9300 / (202) 483-7616 (24 hr)
Spill/Leak Precautions

Q. Additional Comments

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects:	YES
2. Delayed (Chronic) Health Effects:	NO
3. Fire Hazard:	YES
4. Sudden Release of Pressure Hazard:	YES
5. Reactivity Hazard:	NO

SARA 313

As of the preparation date, this product was not subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

R. Additional Comments

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

The following components of this Material are found on the regulatory lists indicated.

Ethane	02, 10, 11, 13, 14
Propane	02, 10, 11, 13, 14, 17
n-Butane	02, 10, 11, 13, 14, 17, 28
i-Butane	02, 10, 11, 13, 14, 17, 28
n-Pentane	02, 10, 11, 13, 14, 17, 28
Cyclopentane	02, 10, 11, 13, 14, 17, 28
2-Methylpentane	02, 10, 11, 13, 14, 17, 28

MSDS Preparation by

INERTIA, Inc., 2002 Mustang Lane, Rosharon, TX 77583

Revision Number 6 Date 12-30-97

Page 6 of 6

NA - Not Applicable ND - No Data

CRAW00014561

This MSDS should be attached or kept with the respective product with which it is associated.

N539,SW540

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: BALL PAINT MARKER

REVISION #: 1.5 DATE PREPARED: JANUARY 18, 1995 DATE REVISED: JULY 2, 1998

MANUFACTURER:

SUPPLIER/IMPORTER:

LA-CO INDUSTRIES, INC./MARTEL CO.

101 PRATT BLVD.

BLK GROVE VILLAGE, IL, USA

407-5746

INFORMATION TELEPHONE: 847-956-7600

EMERGENCY TELEPHONE: CALL CHEMTREC

USA 800-424-9300

INTERNATIONAL (CALL COLLECT) 1-703-527-3887

CHEMICAL FORMULA: MIXTURE

CAS NO.: NOT APPLICABLE SYNONYMS: NOT APPLICABLE DERIVATION: NOT APPLICABLE

TYPICAL USE: PAINT MARKER FOR HARD SURFACES

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO.	%
ETHYL ALCOHOL 3,4,5,6	64-17-5	1-3
CGIH: TWA = 1000 PPM		
OSHA: TWA = 1000 PPM		
SE EH40: TWA = 1000 PPM		
ISOPROPYL ALCOHOL 3,4,5,6	67-63-0	2-3
ACGIH: TWA = 400 PPM, STEL = 500 PPM		
SHA: TWA = 400 PPM		
SE EH40: TWA = 400 PPM, STEL = 500 PPM		
OPTYLENE GLYCOL METHYL ETHER 3,4,5,6	107-98-2	68-79
CGIH: TWA = 100 PPM, STEL = 150 PPM		
OSHA: TWA = 100 PPM, STEL = 150 PPM		
SE EH40: TWA = 100 PPM, STEL = 300 PPM		
ETHYLENE GLYCOL N-BUTYL ETHER 3,4,5,6	111-76-2	1-3
ACGIH: TWA = 25 PPM		
SHA: TWA = 50 PPM		
SE EH40: TWA = 25 PPM		

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT (METHOD): 70 F. TO 75 F./21 C. TO 24 C. (TCC)

AUTOIGNITION TEMPERATURE: NOT DETERMINED

LFL: 0.9%

UEL: 19%

FLAMMABILITY CLASSIFICATION: FLAMMABLE

EXTINGUISHING MEDIA: FOAM, ALCOHOL FOAM, CARBON DIOXIDE, DRY CHEMICAL, WATER FOG.

HAZARDOUS COMBUSTION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE, NITROGEN OXIDES.

UNUSUAL FIRE OR EXPLOSION HAZARDS: NOT APPLICABLE

FIRE-FIGHTING INSTRUCTIONS/EQUIPMENT: KEEP PERSONNEL REMOVED AND UPWIND OF FIRE. WEAR FULL FIRE-FIGHTING TURN-OUT GEAR (FULL BUNKER GEAR), AND RESPIRA PROTECTION (SCBA).

NFPA RATING: HEALTH 1, FLAMMABILITY 3, REACTIVITY 0

SECTION 6 - ACCIDENTAL RELEASE MEASURES

USE RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (SEE SECTION 8).

SMALL SPILL: REMOVE SOURCES OF IGNITION. Wipe up with a TOWEL OR RAG.

LARGE SPILL: REMOVE SOURCES OF IGNITION. AVOID BREATHING VAPORS. VENTILATE AREA. Dike AREA TO CONTAIN SPILL. ABSORB SPILL WITH SAW DUST OR OTHER SUITA ABSORBENT. TRANSFER TO METAL WASTE CONTAINER WITH NON-SPARKING TOOLS. TIGHT COVER WASTE CONTAINER.

SECTION 7 - HANDLING AND STORAGE

HANDLING PRECAUTIONS: USE RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (SEE SECTION 8). WASH THOROUGHLY AFTER HANDLING.

STORAGE REQUIREMENTS: STORE IN A COOL, DRY AREA.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE/FACE PROTECTION: SAFETY GLASSES WITH SPLASH GUARDS, GOGGLES OR FULL FAC SHIELD.

SKIN PROTECTION: SOLVENT RESISTANT GLOVES FOR PROLONGED OR REPEATED CONTACT

RESPIRATORY PROTECTION: IN RESTRICTED AREAS, USE APPROVED CHEMICAL/MECHAN FILTERS DESIGNED TO REMOVE PARTICLES AND ORGANIC VAPOR. IN CONFINED AREAS, APPROVED AIR LINE TYPE RESPIRATOR OR HOOD. SELF-CONTAINED BREATHING APPARAT IS REQUIRED FOR VAPOR CONCENTRATIONS ABOVE PEL/TLV/OES/REL LIMITS (SEE SECT 2).

INERAL SPIRITS

64742-88-7 0-2

(FOR SECTION 2 FOOTNOTES: SEE SECTION 15)

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME.

IRITANT. AVOID CONTACT WITH EYES. KEEP OUT OF REACH OF CHILDREN.

POTENTIAL HEALTH EFFECTS:

PRIMARY ENTRY ROUTES: EYES, SKIN, INGESTION, INHALATION.

EFFECTS:

EYES: LIQUID OR VAPOR CAN IRRITATE.

SKIN: MAY DRY THE SKIN. CAN BE ABSORBED THROUGH THE SKIN.

INGESTION: ORAL TOXICITY IS LOW. CAN CAUSE NAUSEA.

INHALATION: RESPIRATORY IRRITATION, HEADACHE, NAUSEA, FATIGUE, DROWSINESS, IMPAIRED COORDINATION.

CHRONIC EFFECTS:

EYES: PROLONGED CONTACT MAY LEAD TO CORNEAL DAMAGE.

SKIN: PROLONGED CONTACT MAY CAUSE IRRITATION OR DERMATITIS.

INGESTION: POSSIBLE LIVER AND KIDNEY DAMAGE.

INHALATION: POSSIBLE LIVER AND KIDNEY DAMAGE.

CARCINOGENICITY: NOT APPLICABLE

TARGET ORGAN EFFECTS: CHRONIC OVER-EXPOSURE CAN CAUSE LIVER AND KIDNEY DAMAGE.

MEDICAL CONDITIONS AGGRAVATED BY LONG-TERM EXPOSURE: LIVER AND KIDNEY DISEASE.

OTHER INFORMATION: NOT APPLICABLE

HHS RATING: HEALTH 1, FLAMMABILITY 1, REACTIVITY 0

SECTION 4 - FIRST AID

EYE CONTACT: FLUSH WITH WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING UPPER AND LOWER EYELIDS. GET MEDICAL ATTENTION.

SKIN CONTACT: WIPE OFF EXCESS. WASH WITH SOAP AND WATER. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

INGESTION: GET MEDICAL ATTENTION.

INHALATION: REMOVE VICTIM TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED, APPLY ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION.

OTHER INFORMATION: NOT APPLICABLE.

OTHER PROTECTIVE EQUIPMENT: EYE WASH AND SAFETY SHOWER.

ENGINEERING CONTROLS: NORMAL ROOM VENTILATION. LOCAL EXHAUST IN CONFINED AREA

ADMINISTRATIVE CONTROLS: USERS OF THIS PRODUCT MUST BE PROPERLY TRAINED AND QUALIFIED IN ITS USE.

OTHER INFORMATION: NOT APPLICABLE

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE/PHYSICAL STATE: LIQUID PAINT IN PLASTIC BOTTLE WITH METAL BALL POINT TIP.

ODOR: PAINT-LIKE

ODOR THRESHOLD (PPM): NOT DETERMINED

SPECIFIC GRAVITY (20-1, @ 68 F./20 C.): 1

SOLUBILITY IN WATER: SLIGHT

COEFFICIENT OF WATER/OIL SOLUBILITY: LT 1

PH: NOT APPLICABLE

MELTING POINT: NOT APPLICABLE

BOILING POINT: 121-136 F./50-170 C.

VAPOR PRESSURE (MM HG AT 20 C.): APPROXIMATELY 12

VAPOR DENSITY (AIR=1): GT 1

EVAPORATION RATE (N-BUAC=1): APPROXIMATELY 0.7

V.O.C.: 74-87% (W/W), 82-85% (V/V), 5.2-7.2 LBS./GAL. (U.S.)

SECTION 10 - STABILITY AND REACTIVITY

CHEMICAL STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NOT APPLICABLE

CHEMICALS TO AVOID: STRONG OXIDIZING AGENTS

HAZARDOUS DECOMPOSITION PRODUCTS: NOT APPLICABLE

SECTION 11 - TOXICOLOGICAL INFORMATION

SENSITIZATION TO PRODUCT: NOT APPLICABLE

IRRITANCY OF PRODUCT: EYES, SKIN, RESPIRATORY TRACT.

REPRODUCTIVE TOXICITY: NOT APPLICABLE

TERATOGENICITY: NOT APPLICABLE

MUTAGENICITY: NOT APPLICABLE

TOXICOLOGICAL INFORMATION REGARDING INDIVIDUAL INGREDIENTS, IF APPLICABLE, IS FOUND IN SECTION 2.

SECTION 12 - ECOLOGICAL INFORMATION

NOT DETERMINED.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

SECTION 14 - TRANSPORT INFORMATION

U.S. D.O.T.: CONSUMER COMMODITY ORM-D

INTERNATIONAL MARITIME ORGANIZATION (IMO): EXEMPT (LT 0.5 L/MARKER)

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA): FLAMMABLE LIQUIDS, N.O.S.,

UN NO. 1993

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO): FLAMMABLE LIQUIDS, N.O.S.,

UN NO. 1993

ADR: UN 1263; CLASS 3; ITEM 31 (C); HAZARD IDENTIFICATION NO: 30. CEVIC

*RECARD IS NOT APPLICABLE.

SECTION 15 - REGULATORY INFORMATION

FOOTNOTES FOR SECTION 2:

1 SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III, SECTION 113.

2 APPEARS ON THE CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT
SUBSTANCES LIST.

3 APPEARS ON THE MASSACHUSETTS SUBSTANCES LIST.

4 APPEARS ON THE NEW JERSEY RIGHT-TO-KNOW HAZARDOUS SUBSTANCES LIST.

5 APPEARS ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST.

6 APPEARS ON THE CANADIAN WHEAT'S INGREDIENT DISCLOSURE LIST.

OSHA HAZARD STATUS: THIS PRODUCT IS CONSIDERED TO BE HAZARDOUS AS DEFINED BY
THE U.S. OSHA ECH (29 CFR 1910.1200).

TOXIC SUBSTANCES CONTROL ACT (TSCA): ALL INGREDIENTS CONTAINED IN THIS PRODUCT
ARE LISTED ON THE U.S. EPA TSCA CHEMICAL SUBSTANCE INVENTORY.

CANADA:

THIS STATUS: THIS PRODUCT IS CONSIDERED TO BE HAZARDOUS AS DEFINED BY CANADIAN
THIS CONTROLLED PRODUCTS REGULATIONS.

THIS RATING: D-2B, B-2

WHEAT'S RISK PHRASES: FLAMMABLE. EYE IRRITANT.

THIS PRECAUTIONARY STATEMENTS: KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME.
AVOID CONTACT WITH EYES. KEEP OUT OF REACH OF CHILDREN.

DOMESTIC SUBSTANCES LIST (DSL): ALL INGREDIENTS CONTAINED IN THIS PRODUCT IN
THIS PRODUCT ARE LISTED ON THE CANADIAN EPA (CEPA) DOMESTIC SUBSTANCES LIST
(DSL).

U.S.

EUROPEAN INVENTORY OF EXISTING CHEMICAL SUBSTANCES (EINECS): ALL INGREDIENTS
CONTAINED IN THIS PRODUCT ARE LISTED ON THE EUROPEAN INVENTORY OF EXISTING
CHEMICAL SUBSTANCES (EINECS).

CATEGORIES OF DANGER (LABELING INFORMATION): HARMFUL (XN), IRRITATING (Xi)

RISK (R) PHRASES: FLAMMABLE (R10), HARMFUL IF SWALLOWED (522), IRRITATING TO
EYES (336)

SAFETY (S) PHRASES: KEEP OUT OF REACH OF CHILDREN (S2), DO NOT BREATHE VAPOR (S23), AVOID CONTACT WITH SKIN (S24), IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE (S26), WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION (S36/37/39), IN CASE OF FIRE USE FOAM, ALCOHOL FOAM, CARBON DIOXIDE, DRY CHEMICAL, WATER FOG (S43), IF SWALLOWED, SEEK MEDICAL ADVICE AND SHOW THIS CONTAINER, LABEL OR SAFETY DATA SHEET (S46).

FURTHER REGULATORY INFORMATION REGARDING INDIVIDUAL INGREDIENTS, IF APPLICABLE, MAY BE FOUND IN SECTION 2.

THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE U.S. OSHA HAZARD COMMUNICATION STANDARD, THE CANADIAN WORKS CONTROLLED PRODUCTS REGULATIONS, THE BRITISH CIP2 REGULATION 6, AND THE AUSTRALIAN MHCOWHS. THIS MSDS CONTAINS THE INFORMATION REQUIRED BY THE ABOVE REGULATIONS AND CONFORMS TO ANSI Z400.1-1993.

SECTION 16 - OTHER INFORMATION

MSDS PREPARED BY: DIRECTOR OF CHEMICAL SAFETY

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF. HOWEVER, LA-CO INDUSTRIES, INC. MAKES NO REPRESENTATIONS AS TO ITS COMPLETENESS OR ACCURACY. INFORMATION IS SUPPLIED ON CONDITION THAT PERSONS RECEIVING SUCH INFORMATION WILL MAKE THEIR OWN DETERMINATION AS TO ITS SUITABILITY FOR THEIR PURPOSES PRIOR TO USE. IN NO EVENT WILL LA-CO INDUSTRIES, INC. BE RESPONSIBLE FOR DAMAGES OF ANY NATURE WHATSOEVER RESULTING FROM THE USE OF OR RELIANCE UPON THE INFORMATION CONTAINED HEREIN.

028428930

HAZARDOUS MATERIAL WARNING (HAZMAT)

5W540

When shipment is complete, retain for daily Hazmat audit.

GRAINGER SHIPPING INFORMATION

STOCK # : 5W540
IDS # : 2SC94
WEIGHT CODE : 0800
DOT PROPER SHIP NAME : CONSUMER COMMODITY, ORM-D

WE RESTRICTIONS : 20 LB. & UNDER REQUIRES 200 LB. BSC/32 ECT.
21 LB. & OVER REQUIRES 275 LB. BSC/44 ECT.

HAZARDOUS CLASS NUMBER :

ID # :
PACKING GROUP :
SHIPPING LABEL : ORM-D

NETTED QUANTITY : N

CARTON INSTRUCTIONS : REPACK IN GRAINGER S CARTON

EXCEPTION :

DOT/UPS EXEMPTION NO. :

COMMENTS 1 : HAZARDOUS MATERIAL. DO NOT SHIP AIR!!

COMMENTS 2 :

SHIPPING PAPERS : AUTOMATED BILL OF LADING REQUIRED FOR TRUCK SHIPMENTS.

ACCARD OFFERED ? YES () NO () PLEASE MARK ONE

ERS TO ACCOMPANY SHIPMENT

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MATERIAL SAFETY DATA SHEET (MSDS)

**USA
HMIS INDEX**
HEALTH - 0
FLAMMABILITY - 0
REACTIVITY - 0
PERSONAL
PROTECTION - A*
(See Section VIII)

NFPA CODE

HEALTH	0	0	FIRE
SPECIAL HAZARD		REACTIVITY	

**CANADA
WHMIS INDEX**
HEALTH - 0
FLAMMABILITY - 0
REACTIVITY - 0
PERSONAL
PROTECTION - A*
(See Section VIII)

SECTION I

EMERGENCY TELEPHONE NO.

TRADE NAME
(If None, Put Chemical) Band-Ade® Sawing Fluid

413/525-3961 ext. 608

**CHEMICAL NAME
AND SYNONYMS** Sawing Fluid Blend - Trade Secret

REVISED DATE 3/27/98

MANUFACTURER'S NAME American Saw & Mfg. Company

SUPERCEDES 9/2/94

**ADDRESS (Number, Street,
City, State, Zip Code)** 301 Chestnut Street, East Longmeadow, MA 01028 U.S.A.

SECTION II - INGREDIENTS

This Fluid Does Not Contain Any Chemicals Listed in SARA Title III,
Section 313 Of The Emergency Planning And Community Right-To-Know
Act of 1986 Or In OSHA 29 CFR 1910, Subpart Z List.

**Note - Canadian Users: This Is Not A Controlled Product Under The
WHMIS Guidelines.**

SECTION III - PHYSICAL DATA

BOILING POINT (°C) / (°F)	99°C / 210°F	PERCENT VOLATILE BY VOLUME (%)	NA
VAPOR PRESSURE (MM Hg.)	NA	pH	8.5 - 8.7
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE	NA
SOLUBILITY IN WATER	100%	FREEZING POINT (°C) / (°F)	-6°C / 21°F
SPECIFIC GRAVITY (H₂O=1)	1.016	VISCOSITY (Room Temp.) 72°F	40 SUS

APPEARANCE AND ODOR Translucent Amber, Odor - Characteristic

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) None.	FLAMMABLE LIMITS None.	LEL NA	UEL NA
EXTINGUISHING MEDIA Water Or Carbon Dioxide.			
SPECIAL FIRE FIGHTING PROCEDURES None Required.			
UNUSUAL FIRE AND EXPLOSION HAZARDS None.			

NA - Not Applicable

AMERICAN SAW & MFG. COMPANY

301 CHESTNUT STREET, EAST LONGMEADOW, MA 01028 U.S.A.
800/628-3030 • 413/525-3961
FAX: 800/223-7906 • 413/525-2336

EDP 40161

CRAW00014568

Lampros



Material Safety Data Sheet

- Click on the product name to go to the Salesfax description sheet.
- Click on the grade to go to the Salesfax typical test data sheet.

Chevron Hydraulic Oil AW ISO 46

TARE CODE: H046

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON Hydraulic Oil AW ISO 46

PRODUCT NUMBER(S): CPS238074 CPS255674

COMPANY IDENTIFICATION

Chevron Products Company
Global Lubricants
Environment, Health and Safety
Room 1131
555 Market St.
San Francisco, CA 94105-2870

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500
Environmental, Safety, & Health Info: (415) 894-1899
Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON Hydraulic Oil AW ISO 46

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
------------	--------	-----------	-------------

LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING
> 98.0%

SOLVENT DEWAXED DIST., HVY PAR

Chemical Name: DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC
CAS64742650

5 mg/m3 (mist)	ACGIH TWA
10 mg/m3 (mist)	ACGIH STEL
5 mg/m3 (mist)	OSHA PEL

HYDROTREATED DIST., HVY PARA

Chemical Name: DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
CAS64742547

5 mg/m3 (mist)	ACGIH TWA
10 mg/m3 (mist)	ACGIH STEL
5 mg/m3 (mist)	OSHA PEL

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ADDITIVES

< 2.0%

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m³, the OSHA PEL is 5 mg/m³.

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

EYE:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. Prolonged or repeated breathing of petroleum oil mist can cause respiratory irritation. This hazard evaluation is based on data from similar materials.

4. FIRST AID MEASURES

EYE:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

NOTE TO PHYSICIANS:

In an accident involving high pressure equipment, this product may be

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injected under the skin. Such an accident may result in a small, sometime bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

5. FIRE FIGHTING MEASURES

SPECIAL NOTES: Leaks/ruptures in high pressure systems using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

FLAMMABLE PROPERTIES:

FLASH POINT: (COC) 381F (194C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NEPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur and phosphorus. Normal combustion forms oxides of zinc. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616

ACCIDENTAL RELEASE MEASURES:

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

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No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Pale yellow liquid.

pH: NDA

VAPOR PRESSURE: NA

VAPOR DENSITY

(AIR=1): NA

BOILING POINT: NA

FREEZING POINT: NDA

MELTING POINT: NA

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6C

VOLATILE ORGANIC

COMPOUNDS (VOC): <2.2 (wt.%); 19 g/l (est.) ASTM D 2369

EVAPORATION RATE: NA

VISCOSITY: 41.4 cSt @ 40C (Min.)

PERCENT VOLATILE

(VOL): NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on

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data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

This material is not expected to present any environmental problems other than those associated with oil spills.

13. DISPOSAL CONSIDERATIONS

Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:	1. Immediate (Acute) Health Effects:	NO
	2. Delayed (Chronic) Health Effects:	NO
	3. Fire Hazard:	NO
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a) (2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)

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05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory lists indicated.

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
is found on lists: 14,15,17,
DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC
is found on lists: 14,15,17,

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows:
PETROLEUM OIL

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0;
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

This revision updates Section 1 (Company Identification).

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
A1-5 - Appendix A Categories	() - Change Has Been Proposed
NDA - No Data Available	NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

THIS IS THE LAST PAGE OF THIS MSDS

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Lampres



Material Safety Data Sheet

- Click on the product name to go to the Salesfax description sheet.
- Click on the grade to go to the Salesfax typical test data sheet.

Chevron Delo® 400 Multigrade SAE 15W-40

TARR CODE: D4001540

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON DELO 400

PRODUCT NUMBER(S): CPS235101 CPS235109 CPS235117 CPS235118
CPS235119 CPS235120 CPS235200 CPS235246

SYNONYM: CHEVRON DELO 400 ESI Multigrade SAE 15W-40

CHEVRON DELO 400 Multigrade SAE 15W-40

CHEVRON DELO 400 SAE 10W

CHEVRON DELO 400 SAE 10W-30

CHEVRON DELO 400 SAE 20

CHEVRON DELO 400 SAE 30

CHEVRON DELO 400 SAE 40

CHEVRON DELO 400 SAE 50

COMPANY IDENTIFICATION

Chevron Products Company
Global Lubricants
555 Market St.
Room 803
San Francisco, CA 94105-2870

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (703)527-3887
Int'l collect calls accepted

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500
Environmental, Safety, & Health Info: (415) 894-0703
Product Information: (800) 582-3835

SPECIAL NOTES: This MSDS is for the entire line of CHEVRON DELO 400 products.

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON DELO 400

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
------------	--------	-----------	-------------

LUBRICATING BASE OIL
SEVERELY REFINED PETROLEUM DISTILLATE

> 75.00%	5 mg/m3 (mist)	ACGIH TWA
	10 mg/m3 (mist)	ACGIH STEL
	5 mg/m3 (mist)	OSHA PEL

The BASE OIL may be a mixture of any of the following: CAS 64741884,

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CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525,
CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

ADDITIVES INCLUDING THE FOLLOWING
< 25.00%

ZINC ALKYL DITHIOPHOSPHATE

Chemical Name: PHOSPHORODITHIOIC ACID,O,O-DI-C1-14-ALKYL ESTERS, ZINC SALT
CAS68649423 < 1.60% NONE NA

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

EYE:

Not expected to cause prolonged or significant eye irritation.

SKIN:

Contact with the skin is not expected to cause prolonged or significant irritation. Not expected to be harmful to internal organs if absorbed through the skin.

INGESTION:

Not expected to be harmful if swallowed.

INHALATION:

Contains a petroleum-based mineral oil that may cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of airborne levels above the recommended exposure limit.

4. FIRST AID MEASURES

EYE:

No specific first aid measures are required because this material is not expected to cause eye irritation. As a precaution remove contact lenses, if worn, and flush eyes with water.

SKIN:

No specific first aid measures are required because this material is not expected to be harmful if it contacts the skin. As a precaution, remove clothing and shoes if contaminated. Use a waterless hand cleaner, mineral oil, or petroleum jelly to remove the material. Then wash skin with soap and water. Wash or clean contaminated clothing and shoes before reuse.

INGESTION:

No specific first aid measures are required because this material is not expected to be harmful if swallowed. Do not induce vomiting. As a precaution, give the person a glass of water or milk to drink and get medical advice. Never give anything by mouth to an unconscious person.

INHALATION:

If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

5. FIRE FIGHTING MEASURES

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FIRE CLASSIFICATION:

Classification (29 CFR 1910.1200): Not flammable or combustible.

FLAMMABLE PROPERTIES:

FLASH POINT: (COC) 392-428F (200-220C) min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

This material will burn although it is not easily ignited.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen, phosphorus, and boron. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (703)527-3887

International Collect Calls Accepted

ACCIDENTAL RELEASE MEASURES:

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

Do not use pressure to empty drum or drum may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of. Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Use in a well-ventilated area. If user operations generate an oil mist, use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

SKIN PROTECTION:

No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances. Suggested materials for protective gloves include: <Viton> <Nitrile> <Silver Shield> <4H>

RESPIRATORY PROTECTION:

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No special respiratory protection is normally required. If user operations generate an oil mist, determine if airborne concentrations are below the recommended exposure limits. If not, select a NIOSH/MSHA approved respirator that provides adequate protection from concentrations of this material. Use the following elements for air-purifying respirators: particulate.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Dark brown liquid.

pH: NDA
VAPOR PRESSURE: NA
VAPOR DENSITY
(AIR=1): NA
BOILING POINT: NDA
FREEZING POINT: NDA
MELTING POINT: NA
SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.
SPECIFIC GRAVITY: 0.87 - 0.89 @ 15.6/15.6C
VOLATILE ORGANIC
COMPOUNDS (VOC): 1.1 wt.%, 9.256 g/l
EVAPORATION RATE: NA
VISCOSITY: 5.9 - 18.6 cSt @ 100C (min.)
PERCENT VOLATILE
(VOL): NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

No data available.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

The eye irritation hazard is based on data for a similar material.

SKIN EFFECTS:

The skin irritation hazard is based on data for a similar material.

ACUTE ORAL EFFECTS:

The acute oral toxicity is based on data for a similar material.

ACUTE INHALATION EFFECTS:

The acute respiratory toxicity is based on data for a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for

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Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

This material is not expected to be harmful to aquatic organisms.

ENVIRONMENTAL FATE:

This material is not expected to be readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Oil collection services and collection centers are available for used motor oil recycling or disposal. Some service stations, automotive service centers, and retailers provide motor oil collection facilities.

Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:	1. Immediate (Acute) Health Effects:	NO
	2. Delayed (Chronic) Health Effects:	NO
	3. Fire Hazard:	NO
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

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REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory lists indicated.

PHOSPHORODITHIOIC ACID, O,O-DI-CL-14-ALKYL ESTERS, ZINC SALTS

is found on lists: 01, 11,

SEVERELY REFINED PETROLEUM DISTILLATE

is found on lists: 14, 15, 17,

EEC RISK AND SAFETY STATEMENTS:

May cause long-term adverse effects in the aquatic environment.

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows:

PETROLEUM OIL

WHMIS CLASSIFICATION:

This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0;

HMIS RATINGS: Health 1; Flammability 1; Reactivity 0;

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

This is a new Material Safety Data Sheet.

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
Al-5 - Appendix A Categories	() - Change Has Been Proposed
NDA - No Data Available	NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may

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be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

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Lampres



Material Safety Data Sheet

- Click on the product name to go to the Salesfax description sheet.
- Click on the grade to go to the Salesfax typical test data sheet.

HS Diesel Fuel 2 (only grade)

MSDS: 0525 Revision #: 19 Revision Date: 06/03/95

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TARR CODE: HD

HS DIESEL FUEL 2

PRODUCT NUMBER(S): CPS270010 CPS272102 CPS272152 CPS272185

COMPANY IDENTIFICATION

CHEVRON USA PRODUCTS COMPANY
ENVIRONMENTAL, SAFETY, AND HEALTH
ROOM 2900
575 MARKET ST.
SAN FRANCISCO, CA 94105-2856

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (202)483-7616

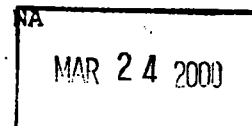
PRODUCT INFORMATION: MSDS REQUEST: (415) 894-2783
ENVIRONMENTAL, SAFETY & HEALTH INFO.: (415) 894-1899
Product Information: (510) 242-5357

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % HS DIESEL FUEL 2

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
DIESEL FUEL NO. 2 Chemical Name: FUELS, DIESEL, NO. 2 CAS68476346	100.0%	NONE	NA
HDS DISTILLATE, MIDDLE Chemical Name: DISTILLATES, HYDRODESULFURIZED MIDDLE CAS64742809		NONE	NA
GAS OIL, LIGHT Chemical Name: DISTILLATES, STRAIGHT RUN MIDDLE CAS64741442		NONE	NA
KEROSENE Chemical Name: KEROSENE CAS8008206		NONE	NA
HYDRODESULFURIZED KEROSENE Chemical Name: KEROSENE, HYDRODESULFURIZED			



CAS64742810

NONE

NA

CAT CRACKED DISTILLATE, LIGHT

Chemical Name: DISTILLATES, LIGHT CATALYTIC CRACKED

CAS64741599

NONE

NA

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

TLV - Threshold Limit Value

TWA - Time Weighted Average

STEL - Short-term Exposure Limit

TPQ - Threshold Planning Quantity

RQ - Reportable Quantity

PEL - Permissible Exposure Limit

C - Ceiling Limit

CAS - Chemical Abstract Service Number

A1-5 - Appendix A Categories

() - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW *****

Red liquid.

- COMBUSTIBLE
- HARMFUL OR FATAL IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE
- CAUSES SKIN IRRITATION
- CANCER HAZARD
- PROLONGED OR REPEATED SKIN CONTACT MAY INCREASE THE RISK OF SKIN CANCER
- KEEP OUT OF REACH OF CHILDREN

POTENTIAL HEALTH EFFECTS

EYE:

This substance is not expected to cause prolonged or significant eye irritation.

SKIN:

This substance is a moderate skin irritant so contact with the skin could cause prolonged (days) injury to the affected area. The degree of injury will depend on the amount of material that gets on the skin and the speed and thoroughness of the first aid treatment. If absorbed through the skin, this substance is considered practically non-toxic to internal organs.

INGESTION:

If swallowed, this substance is considered practically non-toxic to internal organs. Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the substance. Once in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death.

INHALATION:

Prolonged breathing of vapors can cause central nervous system effects. This hazard evaluation is based on data from similar materials.

SIGNS AND SYMPTOMS OF EXPOSURE:

SKIN: May include pain or a feeling of heat, discoloration, swelling, and blistering. INHALATION: Central nervous system effects may include one or more of following: headache, dizziness, loss of appetite, weakness and loss of coordination.

CARCINOGENICITY:

This product contains a mixture of petroleum hydrocarbons called middle distillates (which means they boil between approximately 350F and 700F).

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Because of this broad description, many products are considered middle distillates yet they are produced by a variety of different petroleum refining processes. Toxicology data developed on some middle distillates found that they caused positive responses in some mutagenicity tests and caused skin cancer when repeatedly applied to mice over their lifetime. This product may contain some middle distillates found to cause those adverse effects.

4. FIRST AID MEASURES

EYE:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

If any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

NOTE TO PHYSICIANS:

Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT: (P-M) 125F (52C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: 0.6 Upper: 4.7

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NEPA RATINGS: Health 0; Flammability 2; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85 F.

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire document.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

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CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616

ACCIDENTAL RELEASE MEASURES:

Eliminate all sources of ignition in vicinity of spill or released vapor.

Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases. This material is considered to be a water pollutant and releases of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems.

U.S.A. regulations require reporting spills of this material that could reach any surface waters. The toll free number for the U.S. Coast Guard National Response Center is (800) 424-8802.

7. HANDLING AND STORAGE

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

WARNING! Not for use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Use this material only in well ventilated areas.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Red liquid.

pH: NDA
VAPOR PRESSURE: 0.04 PSIA @ 40C
VAPOR DENSITY (AIR=1): NDA
BOILING POINT: 176 - 370C (348-698F)
FREEZING POINT: NDA
MELTING POINT: NA
SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

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SPECIFIC GRAVITY: 0.84 @ 15.6/15.6C (Typical)
VISCOSITY: 1.9 cSt @ 40C (Min.)

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

Minimal effects clearing in less than 24 hours.

SKIN EFFECTS:

Moderate irritation at 72 hours. (Moderate erythema).

ACUTE ORAL EFFECTS:

The oral LD50 in rats is > 5 ml/kg.

ACUTE INHALATION EFFECTS:

The 4-hour inhalation LC50 in rats is greater than 5 mg/l.

SUBCHRONIC EFFECTS:

The data above is obtained from studies sponsored by the American Petroleum Institute (API).

Whole diesel engine exhaust was reviewed by the International Agency for Research on Cancer (IARC) in their Monograph 46 (1989). Evidence for causing cancer was considered sufficient in animals and limited in humans. IARC placed diesel exhaust in category 2A, considering it probably carcinogenic to humans.

The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. This recommendation was based on test results showing increased lung cancer in laboratory animals exposed to whole diesel exhaust. The excess risk of cancer for people exposed to diesel exhaust has not been determined as studies on exposed workers have been inconclusive. It is recommended that exposure to diesel exhaust be minimized to reduce the potential cancer risk.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

No data available.

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13. DISPOSAL CONSIDERATIONS

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: GAS OIL
DOT HAZARD CLASS: COMBUSTIBLE LIQUID
DOT IDENTIFICATION NUMBER: UN1202
DOT PACKING GROUP: III

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects:	YES
2. Delayed (Chronic) Health Effects:	YES
3. Fire Hazard:	YES
4. Sudden Release of Pressure Hazard:	NO
5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory lists indicated.

KEROSENE

is found on lists: 02,10,11,

16. OTHER INFORMATION

MAR 24 2000

NFPA RATINGS: Health 0; Flammability 2; Reactivity 0; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

This revision updates Section 1 (Chemical Product and Company ID).

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

NDA - No Data Available

NA - Not Applicable

THIS IS THE LAST PAGE OF THIS MSDS.

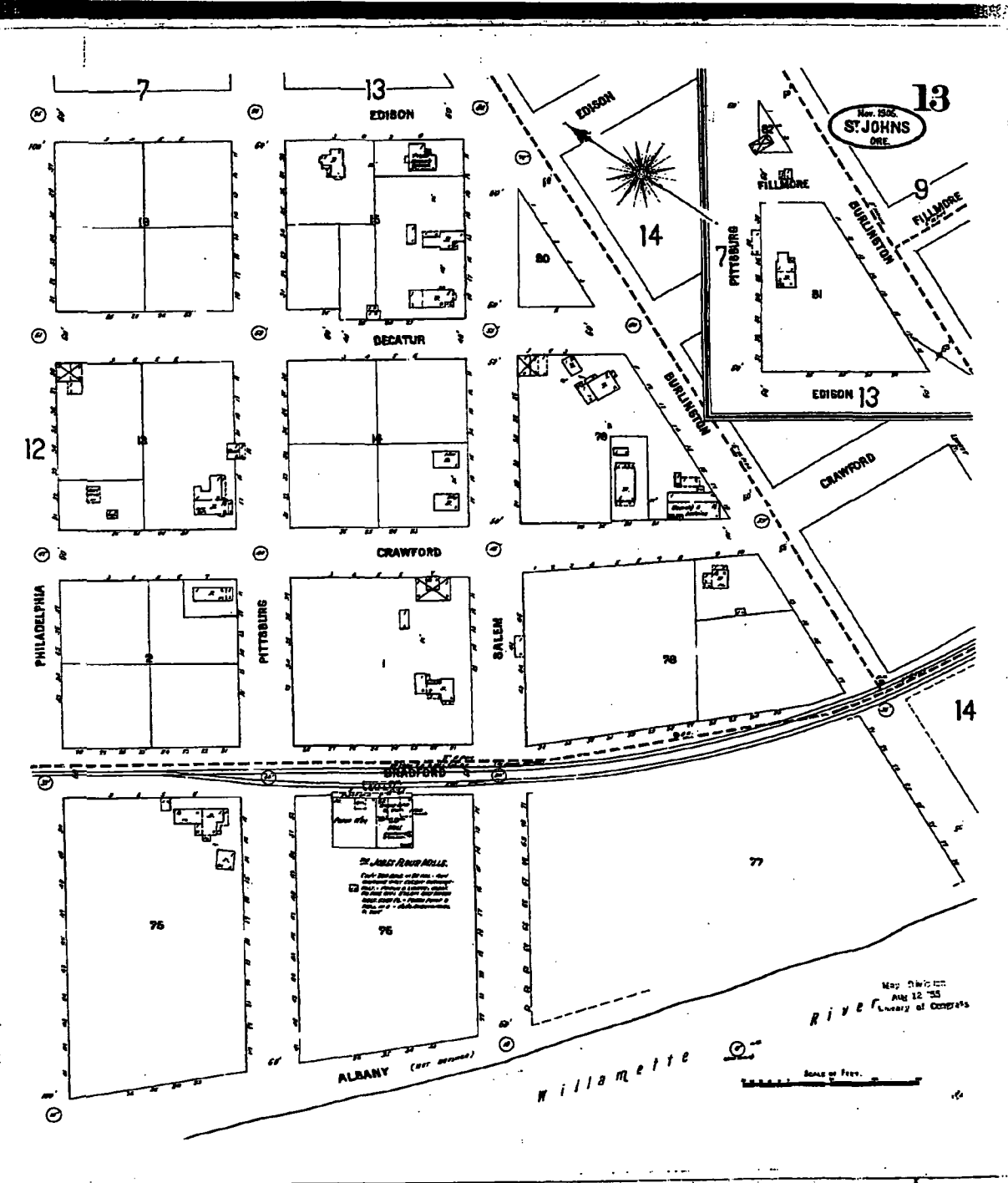
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APPENDIX C

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APPENDIX C

SANBORN FIRE INSURANCE MAPS

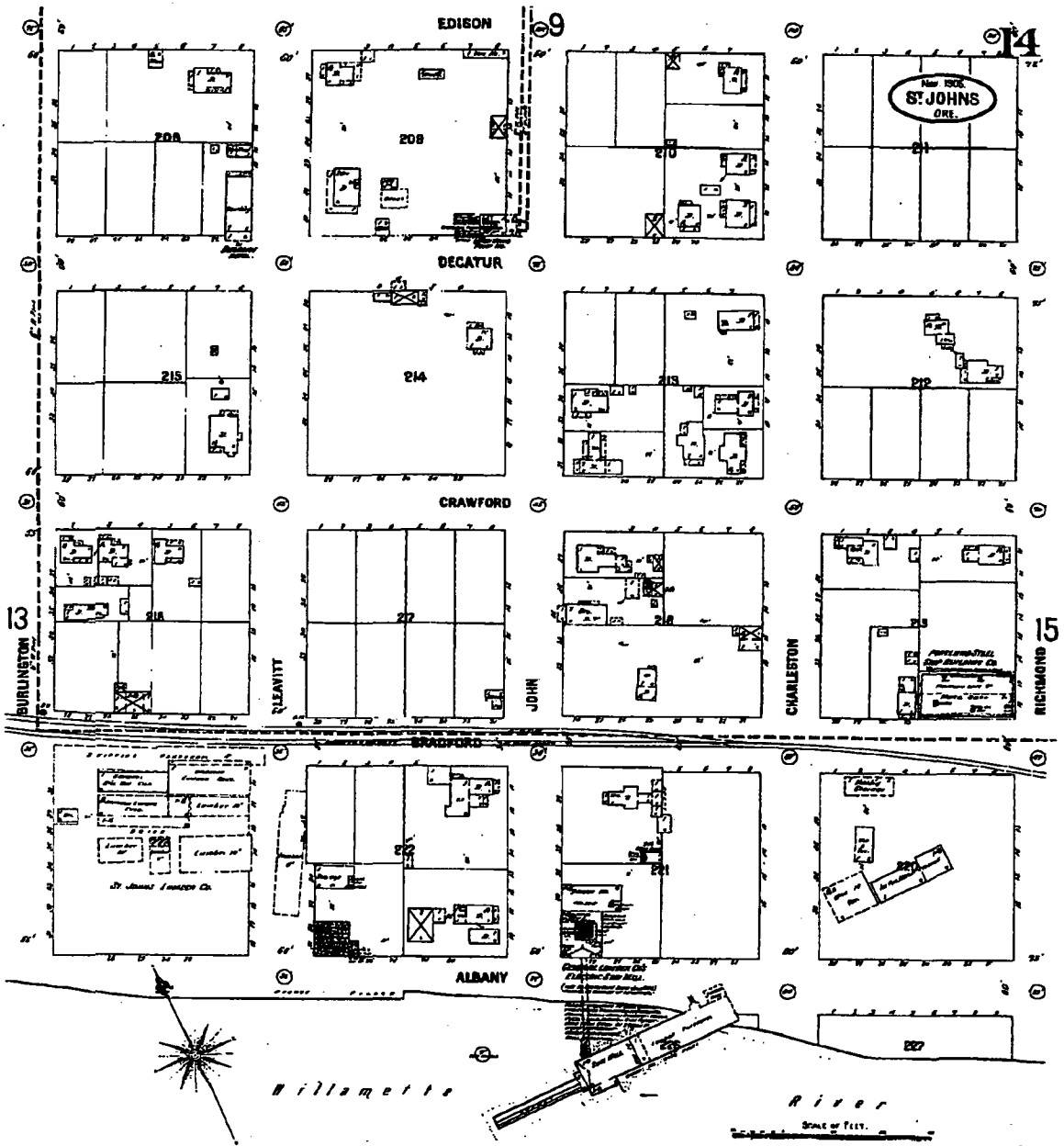



The Sanborn Library, LLC

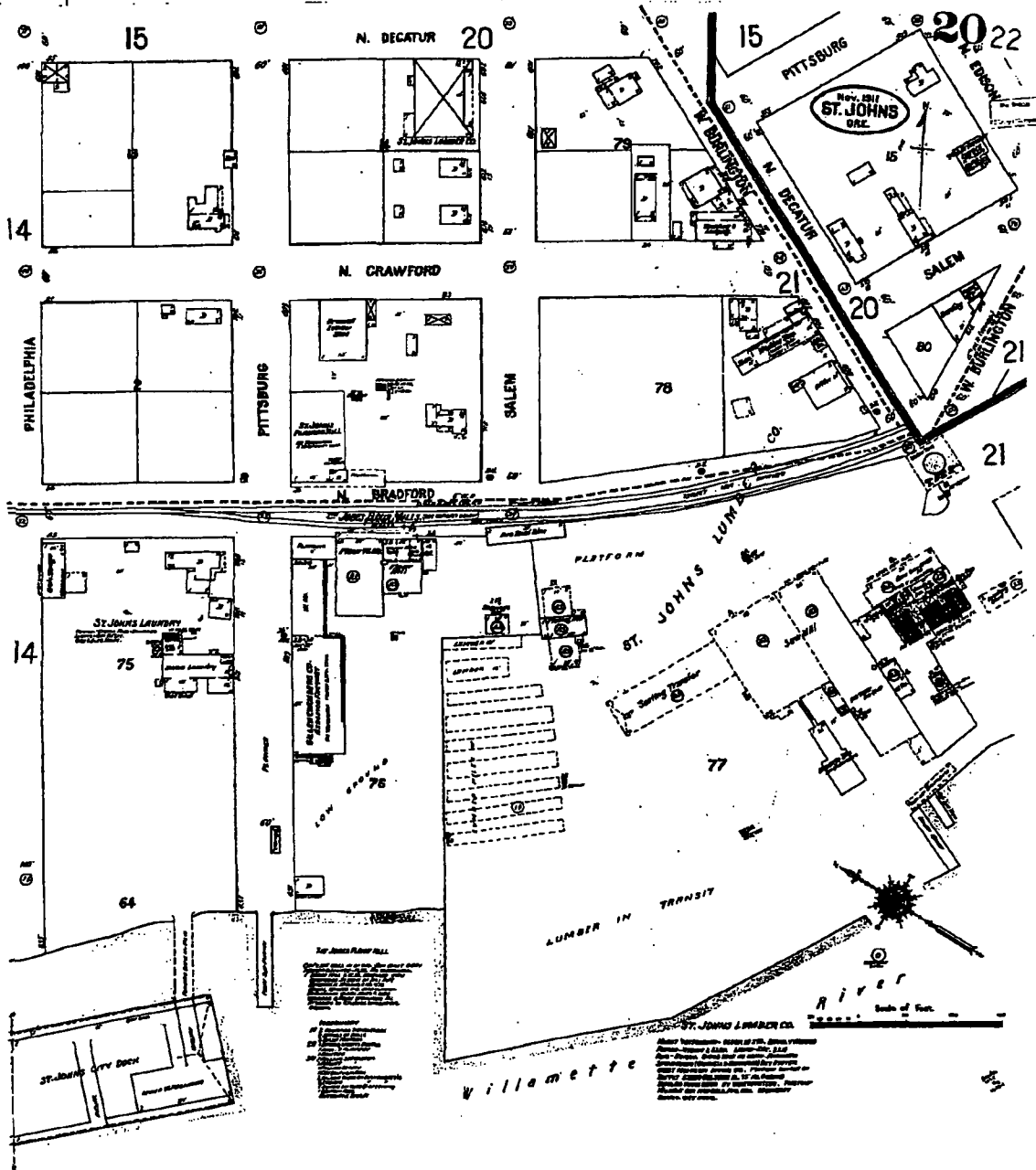
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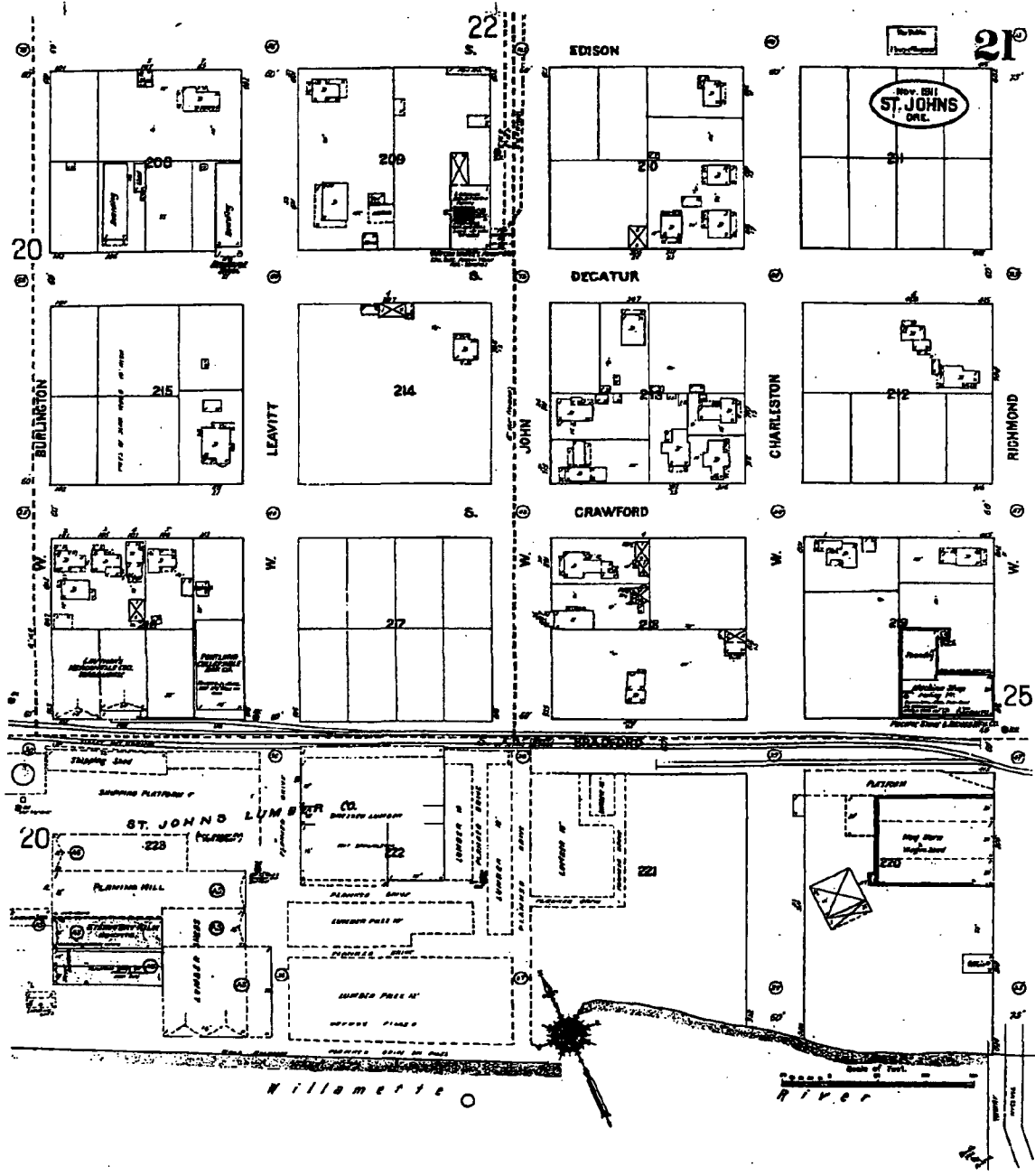


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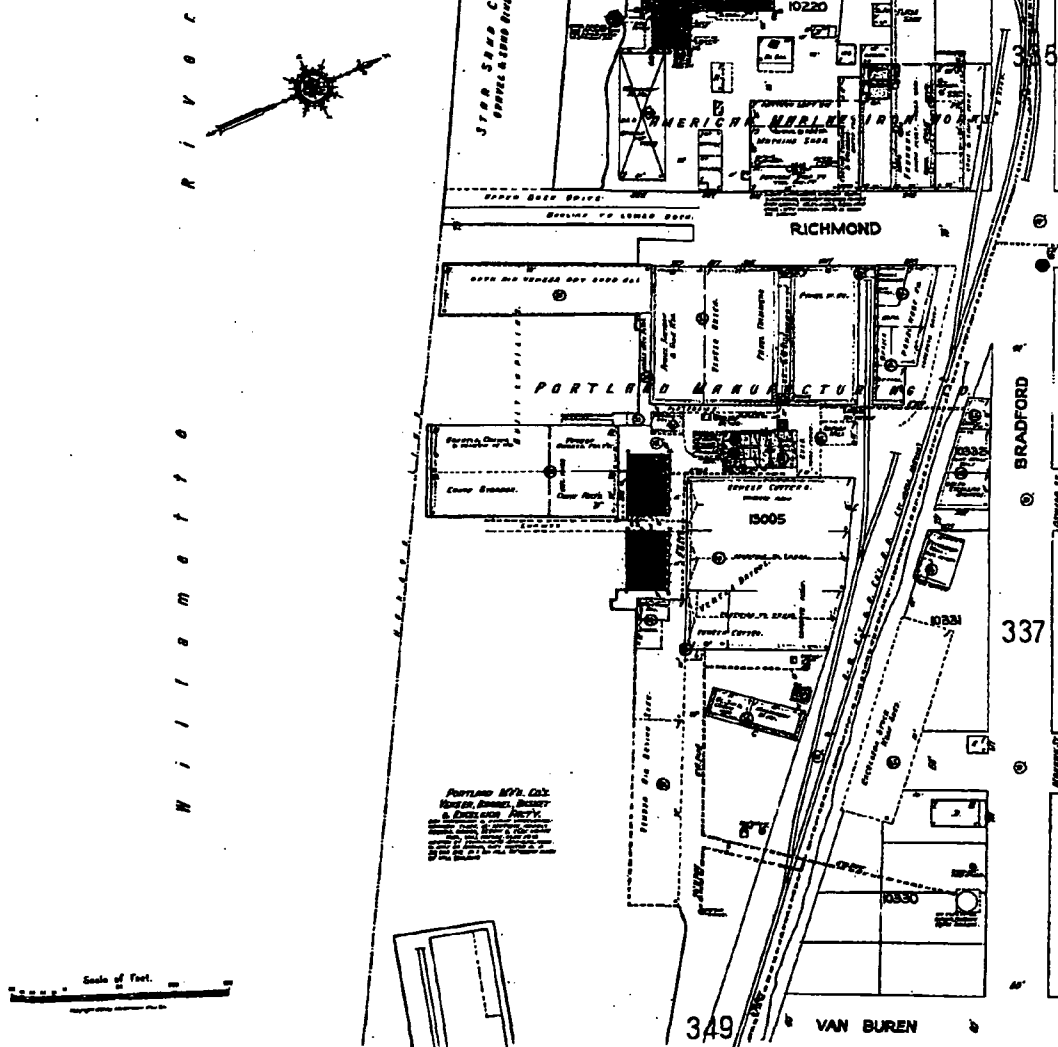
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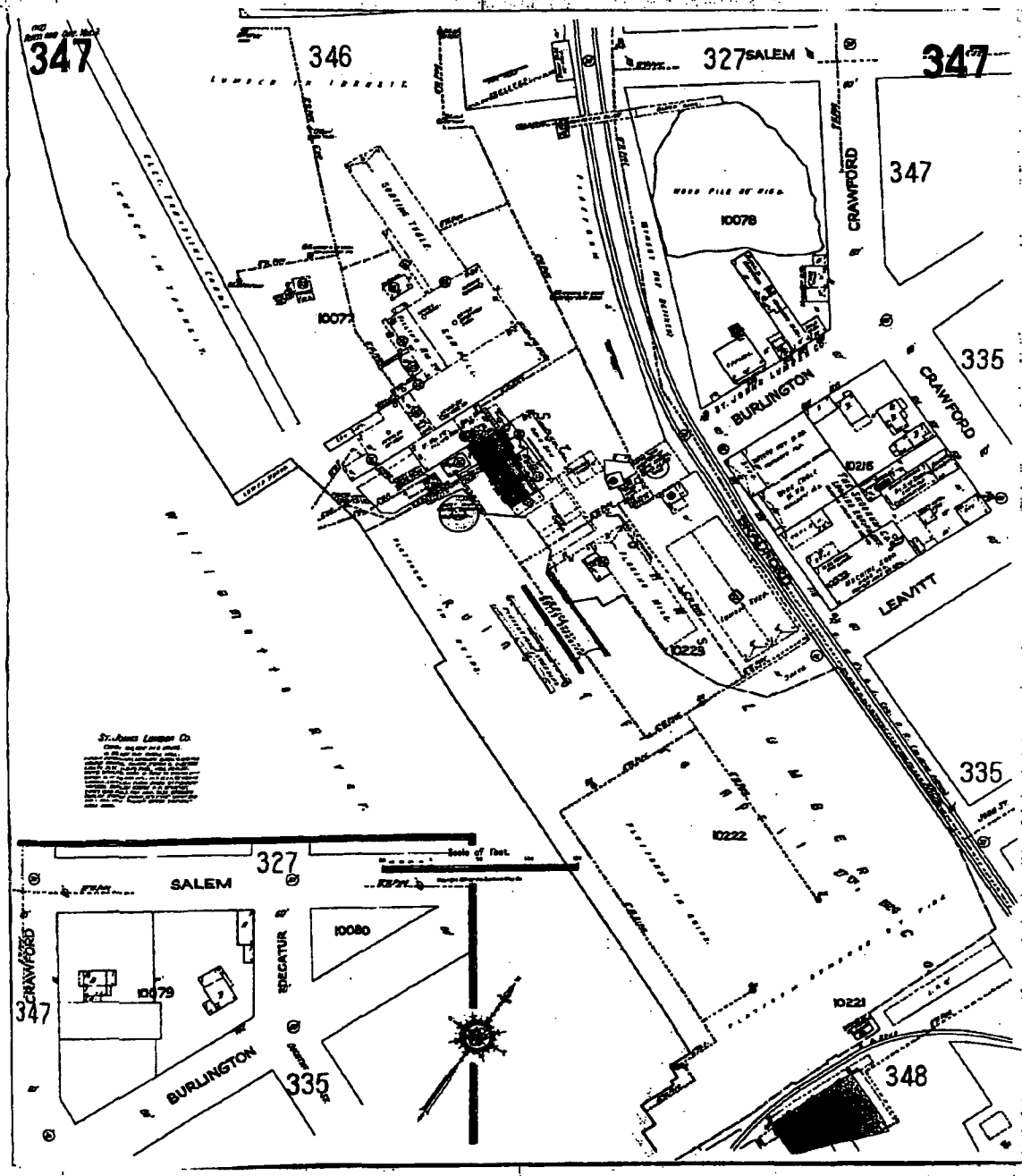


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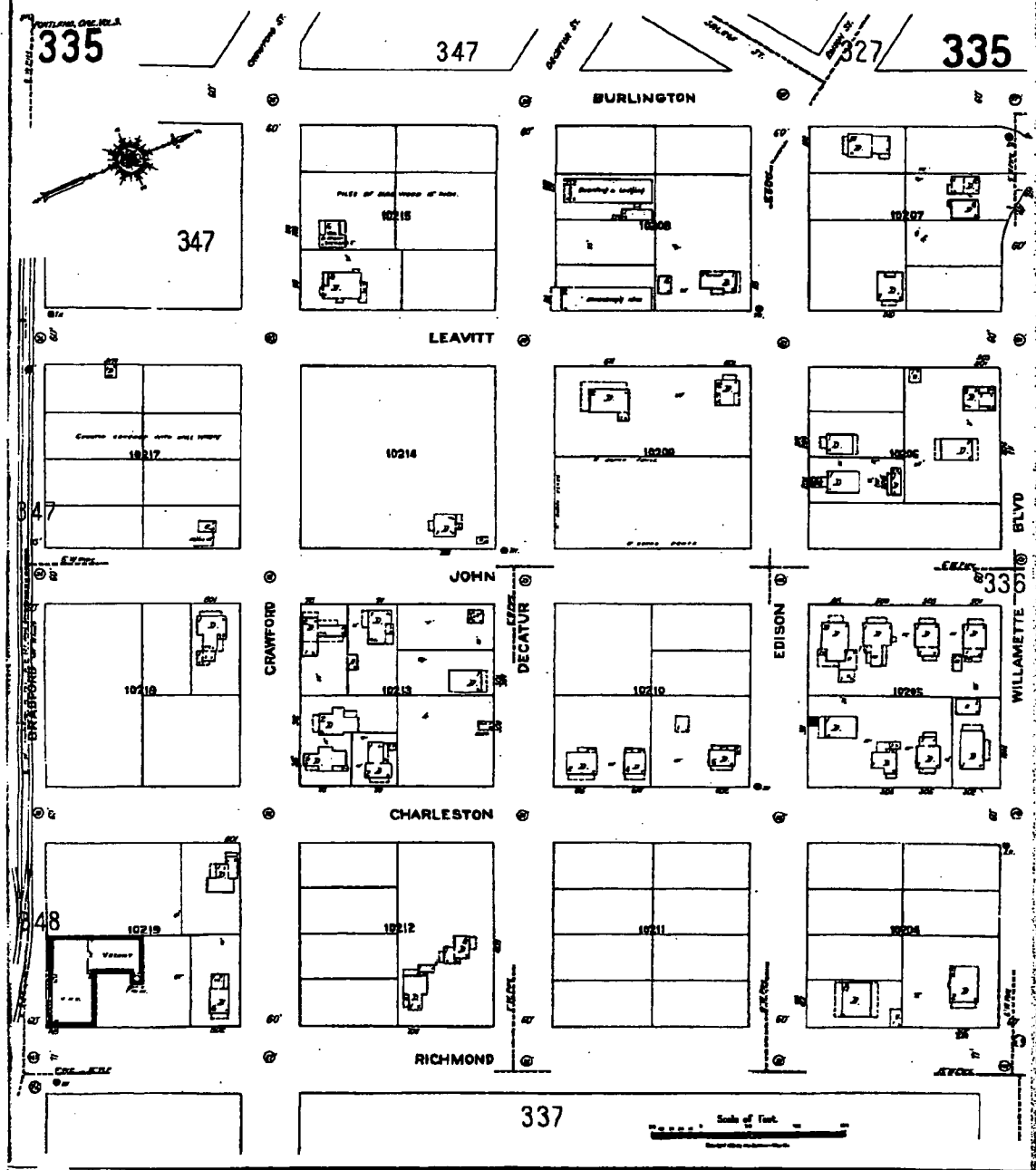


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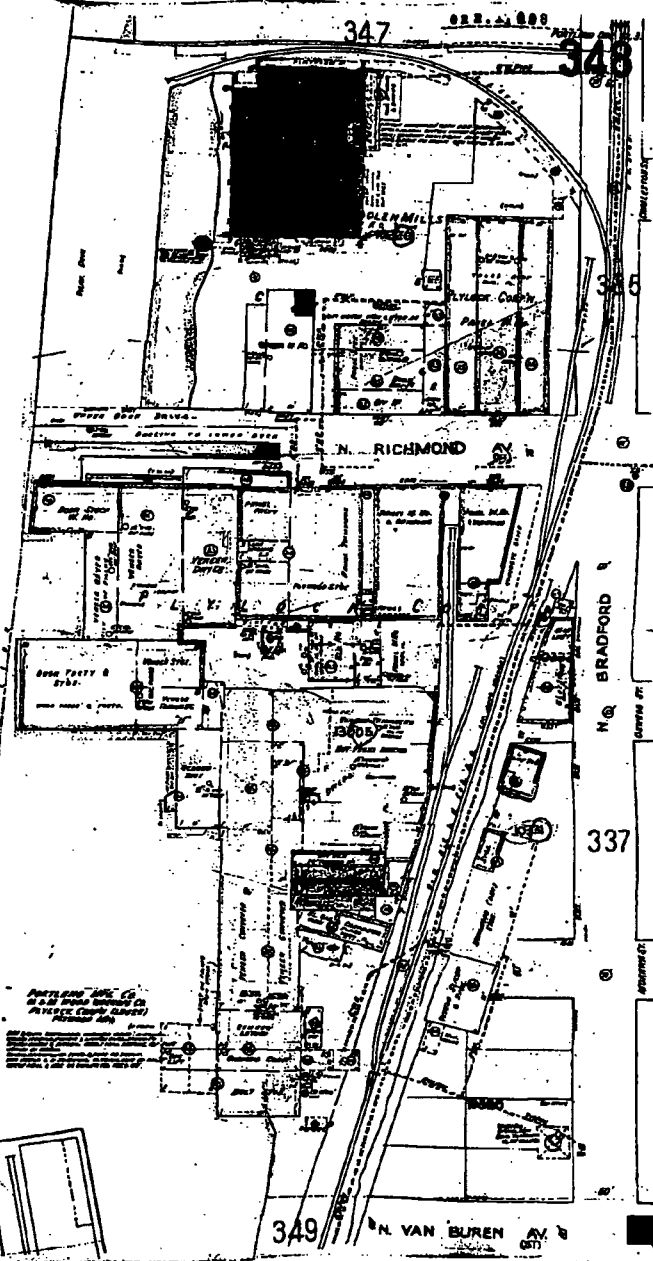
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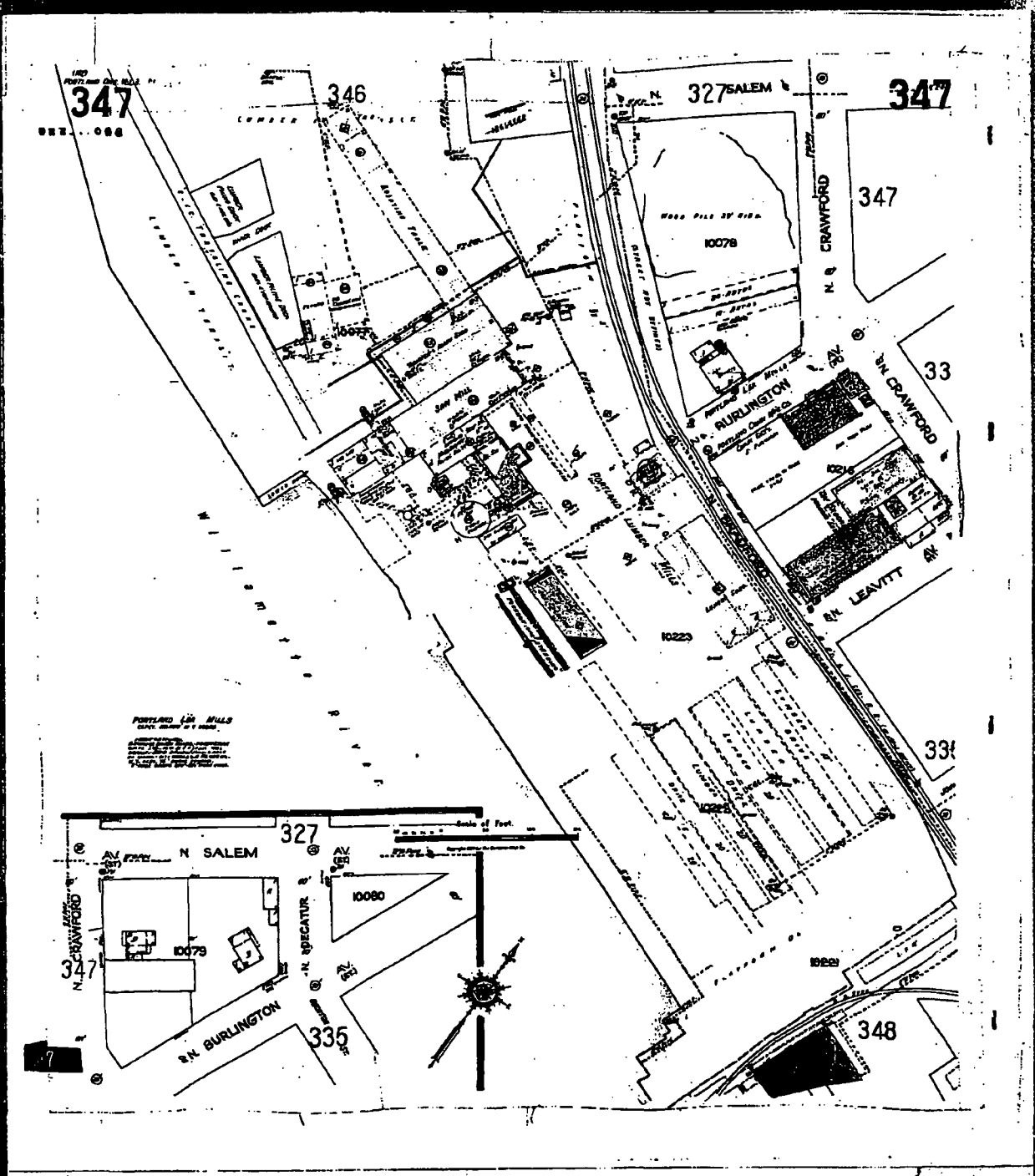


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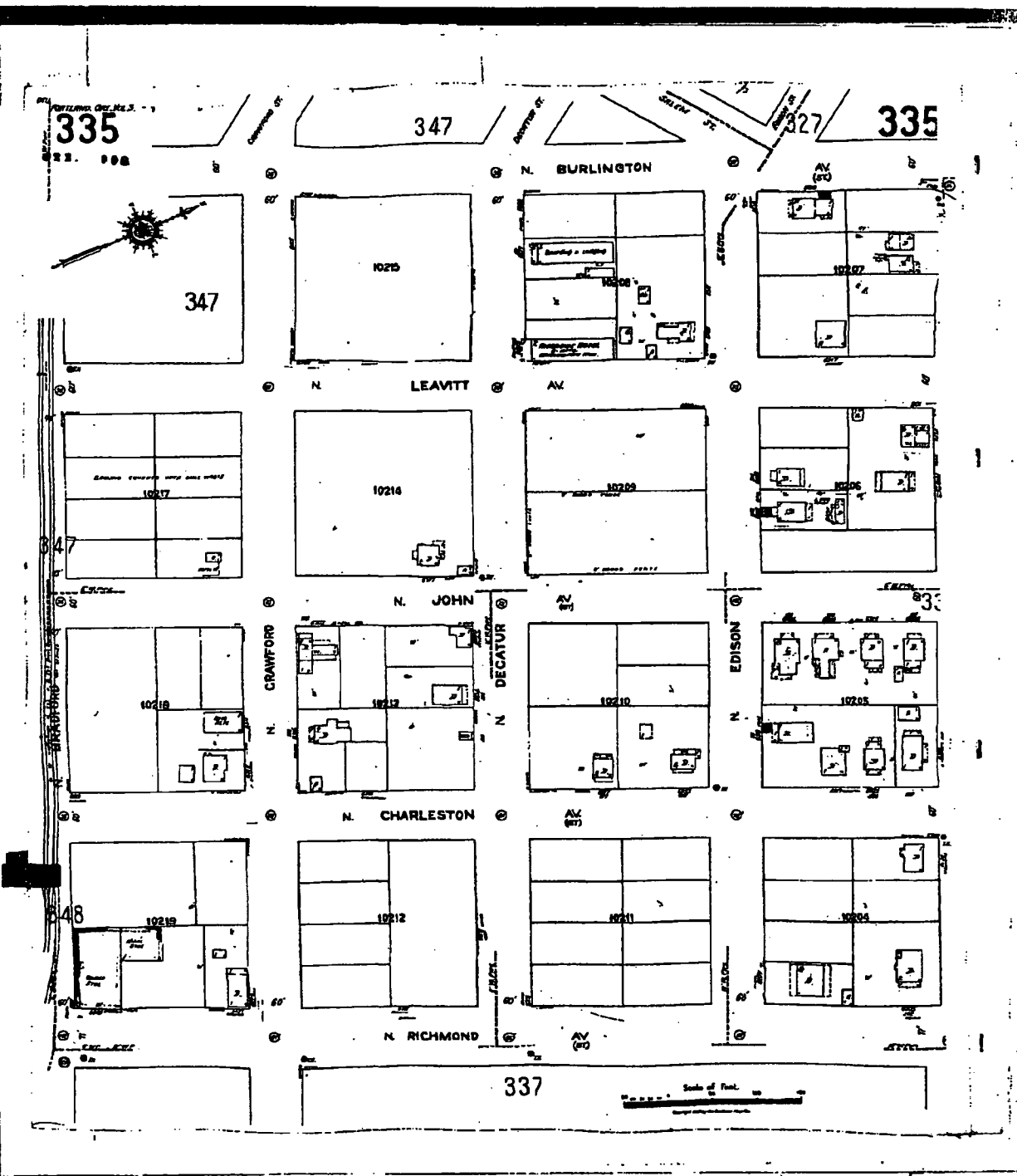



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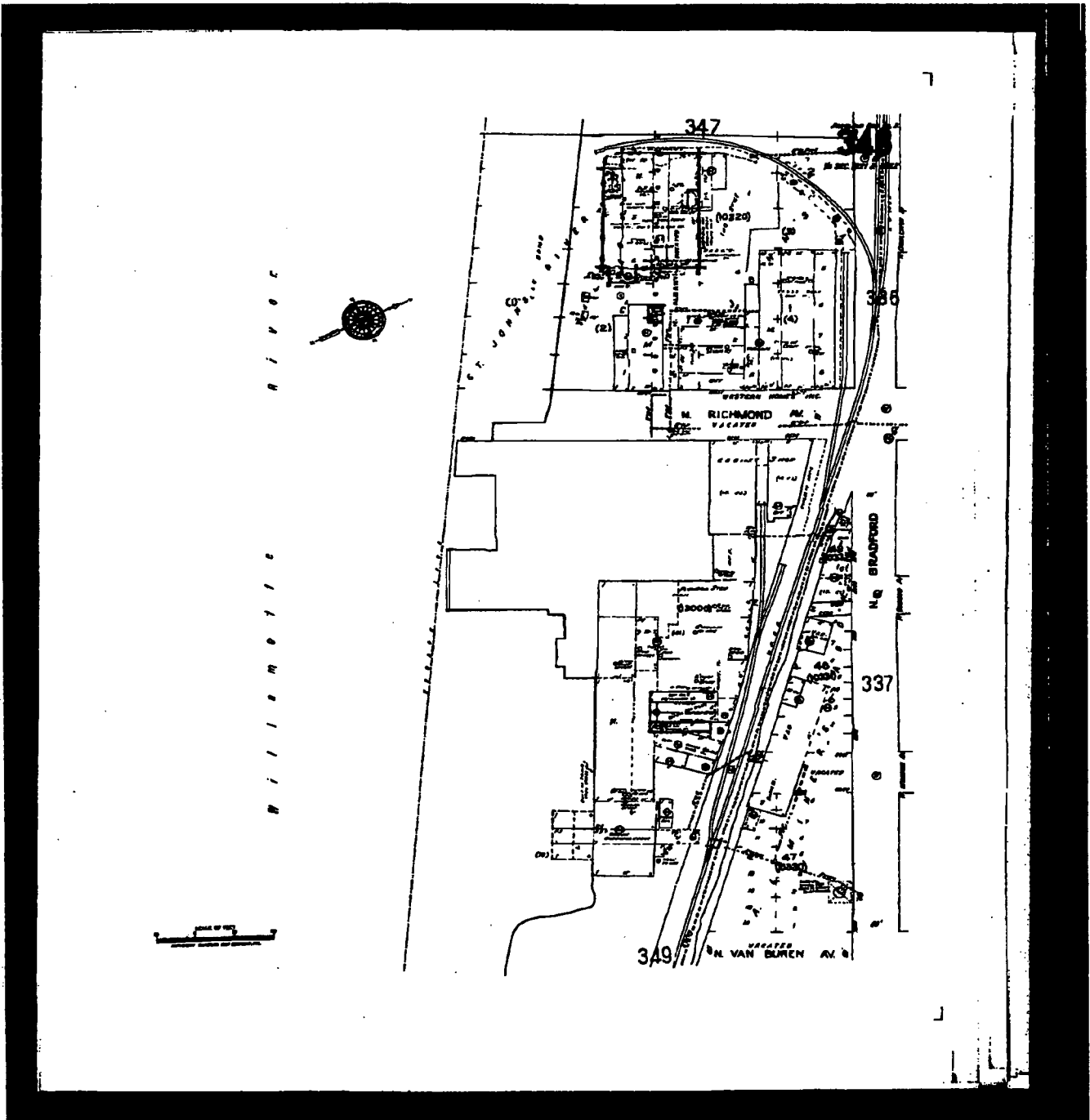
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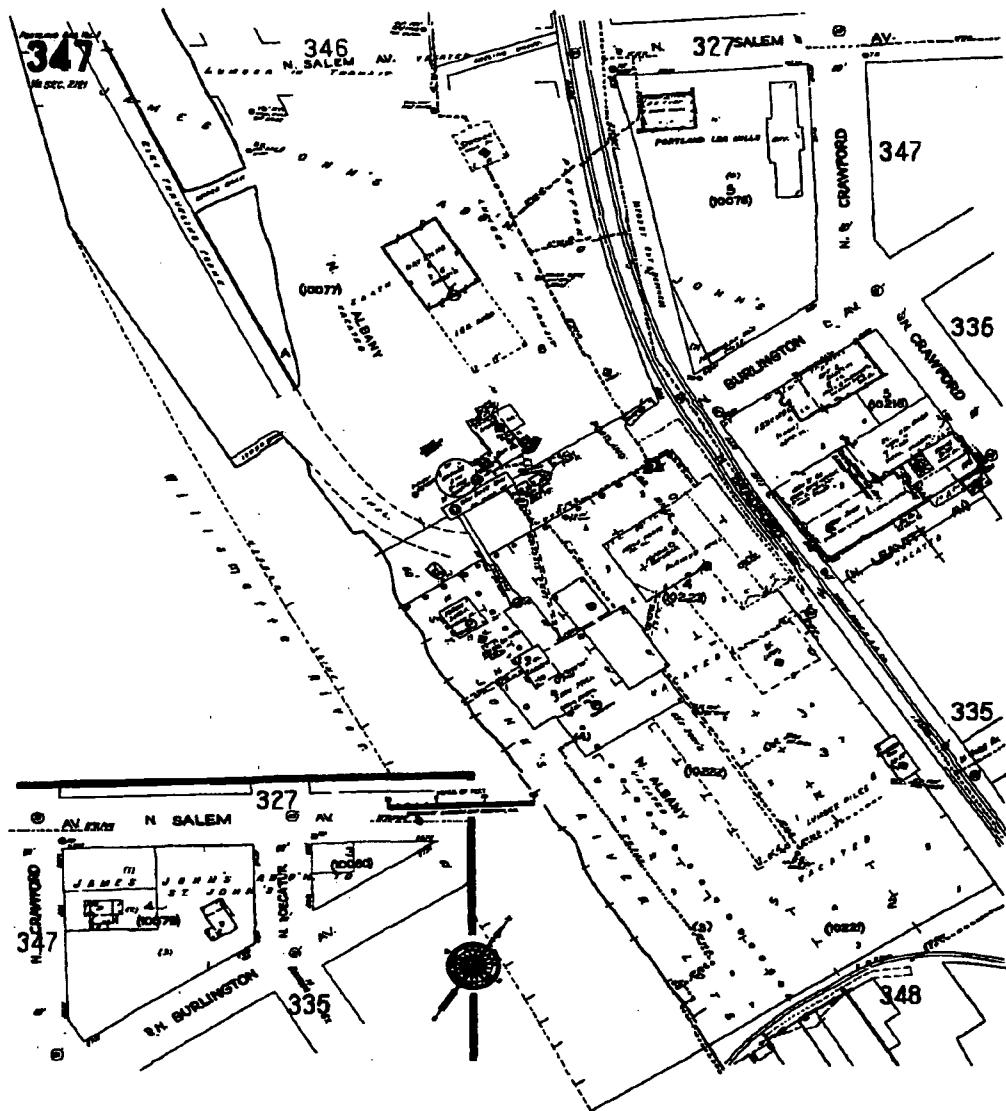



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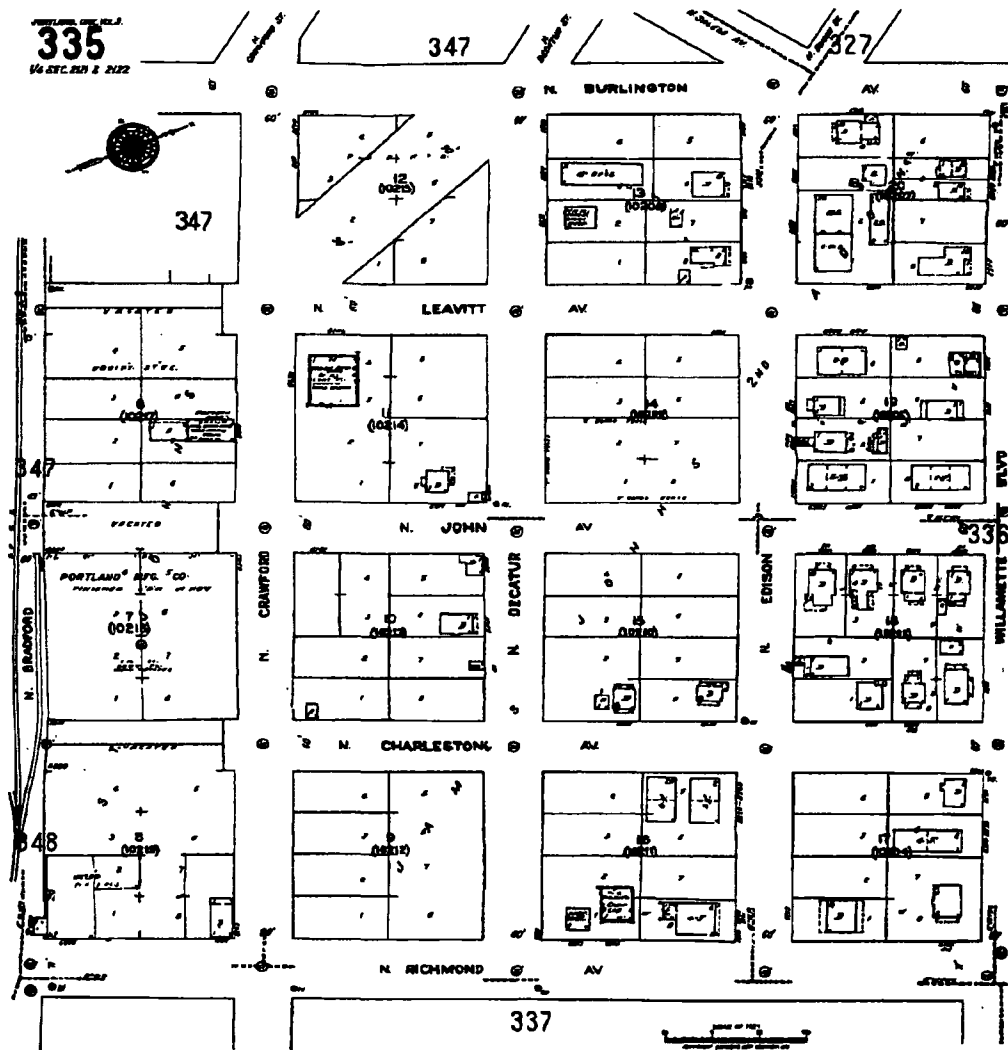
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APPENDIX D

APPENDIX D

**APRIL 4, 1988, SWEET EDWARDS/EMCON
REPORT FOR PROPOSED MANUFACTURING
MANAGEMENT INC. SITE, (LAMPROS
STEEL)**

**ENVIRONMENTAL EVALUATION
PROPOSED MANUFACTURING MANAGEMENT, INC. SITE
(LAMPROS STEEL)
ST. JOHNS DISTRICT, PORTLAND, OREGON**

April 4, 1988

Submitted To Attorneys For:

**Manufacturing Management, Inc.
4927 NW Front Avenue
Portland, Oregon 97210**

Submitted By:

**Sweet-Edwards/EMCON, Inc.
P.O. Drawer B
Kelso, Washington 98626**



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INTRODUCTION

PURPOSE

Attorneys for Manufacturing Management, Inc. (MMI) commissioned Sweet-Edwards/EMCON (SE/E) to conduct an environmental audit of an industrial property in the St. Johns district of Portland, Oregon, for the purposes of preparing a legal opinion and to determine if onsite soil and/or ground water contamination existed because of past onsite or nearby offsite activities. Figure 1 shows the location of the site.

SCOPE OF WORK

Work began with an initial reconnaissance visit to the site on November 10, 1987. After that visit, a work scope and cost proposal were prepared and submitted on November 13, 1987 to N. Webb (MMI). The proposal addressed a documents search and review of historical aerial photography. The purpose of the search/review was to document activities that may have affected soil and/or ground water quality at the site. Work began on the search/review on December 10, 1987. Table 1 lists information sources used to document site-area activities and conditions. Table 2 lists the aerial photographs that were examined to partly reconstruct the site's history.

Physical features observed onsite and information developed during the search/review suggested that underground storage tanks may have been present at the site. Two other concerns were also identified. Part of the site was covered with angular, black medium to coarse sand. The sand had been placed as fill in an

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area where a building had been demolished. The chemical characteristics of the sand were unknown, as were its potential impacts on soil and ground water. Also, a former building had been served with a private septic tank and drainfield. Potential impacts to ground water beneath the drainfield were unknown.

The search/review process thus evolved into 1) exploring for underground storage tanks, 2) field sampling of soil and ground water in specific "target" areas and 3) laboratory testing of soil and ground water to determine the extent of potential contamination. This report describes the site history as developed from the search/review, and goes on to describe the methods and results of the field program.

SITE DESCRIPTION

TOPOGRAPHY AND DRAINAGE

The site is L-shaped (Figure 1), most of it being in a rectangular area occurring as a bench about 20 to 30 feet above the Willamette River. The rectangular area is approximately 400 by 1000 feet. The "foot" of the L-shaped area is at the eastern end of the site and lies on a gentle southwest-facing slope that rises to an elevation of 50 to 60 feet mean sea level (MSL). The "foot" is approximately 150 by 250 feet. A warehouse building is on its western end. The entire site drains to the Willamette River, the major stream in the site area. There are no surface drains or streams that drain the site directly to the river.

GEOLOGY/HYDROGEOLOGY

The site was mapped as being underlain by Willamette River deposits (Trimble, 1963), but exposures along the bluff overlooking the river forming the site's southern boundary suggest the bench portion of the site is immediately underlain by 20 feet of manmade fill. The river deposits and their veneer of fill are inset against older river deposits. The older river deposits extend to elevations below present sea level, where they overlie gravels of the upper part of the Troutdale Formation. The Troutdale is the most productive aquifer in the St. Johns area. However, its upper gravels occur at roughly elevation -100 feet MSL in the St. Johns area. The aquifer is probably not used near the site area because 1) no records exist at the Oregon Water Resources Department for wells near the site area and 2) the area is served by City of Portland drinking water.

PRESENT-DAY SITE ACTIVITIES

There are no present activities at most of the site. It has been vacated. The warehouse present in the "foot" is used by the Portland Development Commission (PDC) for storage.

SITE HISTORY

Review of title records supplied by N. Webb (MMI) shows that the site has been industrialized since the late 1800s. Table 3 partially lists past ownership through the 1960s-late 1970s of the blocks that comprise the site. Figure 2 shows the locations

of the blocks. The past owners listed in Table 3 are only those having business names. Individual owners are not listed. The business names permit broad inferences to be drawn concerning the nature of past onsite business activities.

Most businesses were lumber mills. Other businesses were warehousing and unknown manufacturing and possible shipbuilding work. The latter is suggested by the name "Marine Iron Works" in the title records.

U.S. Army Corps of Engineers photographs (Table 2) document site activities since 1936, the earliest year of photographic coverage. Mill buildings occupied parts of the site since at least 1936. From 1936 to the early 1950s, buildings were present in the eastern end of the main, rectangular part of the site. They were part of a plywood plant complex, most of which was offsite east of North Richmond Avenue. Building "7" (Figure 3) was one of these buildings. It was used variously for wool scouring, plywood storage, and most recently, by "Fibron Insulation" in the late 1970s-early 1980s. Other buildings were also present in the area between building "7" and the river.

A planing mill, sawmill and chip bin had been built by the early 1950s at the western end of the main site area (Buildings "4", "5", "6"; Figure 3). The present PDC warehouse had been built by 1961. By 1973, portions of the mill complex were being dismantled, beginning in the eastern half of the main area. The planing mill and sawmill at the west end of the main area were torn down during 1977-1978 by the last business to operate them, Brand S Corporation. The "Fibron" building was still standing in 1983, but was torn down by 1986, only its foundation remaining. The PDC warehouse is the only remaining onsite structure.

A site visit and interview with a former employee of the former sawmill provided additional detail concerning site history. The former employee provided critical information about two areas at the site. First, the former "Fibron" building had been served by a private septic tank and drainfield that lay between that building and the river.

The second key piece of information concerned the sand that had been placed as fill in the area where the former sawmill (Figure 3, Building "6") had stood. The former employee explained that the sand was placed during demolition of the sawmill in 1977-1978. The former sawmill got the sand from a local sandblasting company. The sand had been used to clean oil tanks on land and in ships. When the sand was placed as fill, it was oily. Winter rains flushed oil from the sand and oily water ran into the Willamette River, creating an oil slick. The Coast Guard warned the sawmill owner and no more sand was placed as fill. The oil slick eventually disappeared.

POTENTIAL CONTAMINANT SOURCES

ONSITE SOURCES

Sand Fill

The sandblast sand placed in the area of the former sawmill created an oil slick on the Willamette River when it was placed in the winter of 1977-78. Residual oil may still locally be present in the sand. The chemical character of the oil is unknown. The oil may be contaminated with solvents or PCBs. Oil

is regulated as a hazardous substance under the new Oregon "Superfund" law, ORS 466.540(9).

Suspected Underground Storage Tank Pipes

Six pipes project vertically out of the ground or out of former floor slabs at the former planing mill and sawmill sites. The pipes range in inside diameter from 6 to 8 inches. All were capped by steel plates secured to flanges with bolts. The purpose of the pipes was unknown. They may have been fill or distribution pipes for underground fuel storage tanks.

Possible Unknown Underground Storage Tanks

Because the site is so large and has been the scene of so many different industrial businesses for essentially 100 years, it was felt by N. Webb (MMI) and SE/E that underground storage tanks probably existed somewhere onsite.

Drainfield

The former "Fibron" building was served by a local septic tank and drainfield. The nature of that building's drain-piping system is unknown. It is possible that chemical spills may have been discharged to the drainfield along with "domestic" sewage.

OFFSITE SOURCES

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Union Pacific Railroad (UPRR) Pipeline

Figure 3 shows the location of an eight-inch pipeline operated by UPRR. The pipeline carries diesel according to Ted Haskill (UPRR). It runs down the middle of North Crawford Street and so is in the presumed upgradient direction for ground water flow with respect to the site. If the pipe has leaked, it would be an upgradient source of diesel.

Former Underground Storage Tanks, Asset Recovery and Columbia Forge

Three tanks were present at Asset Recovery and Columbia Forge along North Crawford Street. Figure 3 shows their former locations. One diesel tank was at Asset Recovery, whereas two tanks, one gasoline and one diesel, were at Columbia Forge. The tanks were removed in March 1987. Appendix 1 contains information on the tanks submitted to the Oregon Department of Environmental Quality (DEQ).

Samples were taken of 1) soil beneath the tanks and 2) the tanks' contents. The test results are in Appendix 1. The gasoline tank at Columbia Forge reportedly had a small hole in it. Soil from beneath the gasoline tanks contained 16 mg/kg gasoline, <1 mg/kg diesel and 30 mg/kg lead. The meaning of the lead sample is uncertain because another soil sample from beneath the tank was tested at <0.1 mg/kg of lead using the EP Toxicity test. The greater value of 30 mg/kg may be due to a different extraction procedure having been used. Allowing for this uncertainty, the other results still suggest that the tank had evidently leaked.

The time of the leak is uncertain because the tank had been empty since 1960 according to information filed with DEQ.

St. Johns Truck and Equipment Repair

This business at 8435 North Crawford Street is directly across from Columbia Forge and, like the UPRR diesel pipeline, is upgradient of the site with respect to ground water flow. One fuel pump is visible at the west side of the repair shop. It presumably serves an underground tank holding gasoline or diesel. No information exists at DEQ on the probable tank.

A second potential contaminant source exists at this business. It is a large metal box in which truck equipment is placed for steam cleaning. The condensate runs into a drain. Where the water drains to is unknown. The condition of the drain piping is unknown.

Oil-Contaminated Soil; Railroad Tracks and Columbia Forge

Two main buildings comprise the Columbia Forge operation. The westernmost building was formerly used by Skookum, a logging equipment manufacturer. The eastern part of that building contained a paint shop. The shop was cleaned by hosing the floor with water. The water ran into a drain that ran out to the southeastern corner of the building and onto ground just north of railroad tracks that are south of the building (Figure 3, location "D").

Oil was carried with the water, resulting in oil seeping into the ground where the drain discharged near the tracks. The affected area is at least 10 feet wide by several tens of feet long. When it rains, stormwater runoff is carried to the area by the drain and a large puddle forms. Oil moves out of the soil and forms an oil slick on the puddle.

Compressor Blowdown, Columbia Forge

An air compressor is located outside the east wall of the easternmost building at Columbia Forge (Figure 3, location "E"). Oil has been blown out from the compressor onto the ground surface south of the plant building.

FIELD INVESTIGATION

ORGANIZATION

Seven discrete work elements, some with subelements, comprised the field investigation. They are described below in the order in which they were performed.

SURFACE GRAB SAMPLES OF SAND FILL

Three samples of the sand fill were taken at the ground surface on November 10, 1987. They were combined into one composite sample to test whether the sand had the characteristics of an Environmental Protection Agency (EPA) characteristic waste as

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determined by the EP Toxicity test. Figure 3 shows the locations of the samples that were combined into the composite test sample.

RIVER BLUFF TRAVERSE

The bluff overlooking the Willamette River was traversed on December 11, 1987 to search for possible springs or seeps. No seeps or springs of ground water or chemical products were observed.

SUSPECTED UNDERGROUND STORAGE TANK PIPES

Four of the suspected fill/distribution pipes were sampled on December 21, 1987. All six pipes were opened, but only four contained enough water to sample. The sampling procedure is described in Appendix 2. Water in the pipes was slightly rusty. Thin, discontinuous oil films were present on the water in two pipes. The pipes were not fill pipes. They did not go straight down into tanks, but instead became horizontal about 2 feet below ground surface.

GEOPHYSICS SEARCH

Geophysical techniques were used to search for possible underground storage tanks in the main area of the site. No geophysical exploration was done in the "foot" area because heavy brush there prevented access. A ground-penetrating radar survey was attempted on December 26, 1987 by Williamson and Associates (Seattle, WA) under SE/E's direction. However, the attempt

failed. Reasons for the failure are discussed in Williamson and Associates' report in Appendix 4.

An electromagnetic (EM) induction survey was run on December 27, 1987 by Geo-Recon (Seattle, WA) under SE/E's direction. Geo-Recon's report is in Appendix 5. The EM survey identified several electrically conductive targets that might have been underground tanks or piping. The targets were marked on the ground with spray paint at the time of their detection. The actual presence or absence of underground tanks was confirmed later by digging.

TEST DRILLING AND GROUND WATER SAMPLING

Drainfield Area

One test boring was drilled on January 4, 1988 in the general area of the former "Fibron" building's drainfield for the purpose of determining if shallow ground water in that area had been affected by the drainfield. The boring is named T-1. Figure 3 shows T-1's location. Appendix 2 describes 1) boring and sample nomenclature and 2) drilling and sampling methods. T-1's boring log is in Appendix 1.

Total depth of T-1 was 41 feet. Ground water was found at depth 34 feet. A sample of ground water was taken within the upper few feet of the saturated zone.

immediately backfilled with the material dug from them and were loosely compacted using the backhoe's bucket.

Sand-Fill Area

Test pits 6, 7, 8, 9, 10 and 11 were dug in the sand fill at the former sawmill. Figure 4 shows the pits' locations with respect to 1) the overall fill area and 2) the area of thickest sand fill. The pits were dug to determine 1) the thickness of the sand and 2) if any residual oil saturation of the sand existed. Table 4 describes general material types found in test pits 6-11.

All pits but TP-7 were dry. In TP-7, the upper 3 feet consisted of dry sand fill. Mixed sand fill, silt and chaotic jumbles of lumber occurred from 3 to 6 feet (Figure 5). Gray clayey silt was encountered from 6 to 6.5 feet, the final depth of TP-7.

Voids existed between pieces of lumber. While the pit was being opened between depths 3 and 6 feet, water was released from some voids and drained into the pit's bottom. The water had a thin oil slick on it, smelled strongly of oil and had a brownish white foam.

*Organic odor from
decomposing wood?*

Two soil samples were collected from TP-7. Sample S-1 was of dry sand fill at depth 3 feet. Sample S-2 was of gray clayey silt at depth 6 feet. Sample S-2 was wet and oily.

Underground Storage Tank at Test Pit 2

With PDC's advance approval, MMI contracted with Crosby and Overton (C&O) (Portland, OR) to remove the underground tank discovered at TP-2. R. Paul of C&O met with R. Bunker (SE/E) at the site on January 8, 198⁸ to be shown where the tank was located. C&O reopened the excavation and sampled the tank's contents. C&O submitted the sample to Northwest Testing Laboratories (Portland, OR). However, SE/E took the sample from Northwest Testing on January 11, 1988 at N. Webb's (MMI) request and resubmitted it to Columbia Analytical Services (Longview, WA). The sample was of oil. It was tested for 1) PCBs, 2) benzene, 3) toluene, 4) ethyl benzene, 5) total xylene, 6) total tetrachlorophenol, 7) pentachlorophenol, 8) total organic halogens (TOX), 9) EPA Priority Pollutant metals, 10) total suspended solids, 11) percent water and 12) the EPA characteristic waste categories of corrosivity, ignitability and reactivity. The test results are in Appendix 6 (report dated ^{February 2, 1988?} January 21, 1988). The tests were done to determine if the oil was a hazardous waste. It was not; and arrangements were made by C&O to dispose of the oil at Merit Oil (Portland, OR).

The tank and its contents were removed on January 18, 1988. A representative from SE/E watched C&O perform the removal. A representative of the PDC also observed the removal. A Komatsu PC 2000 trackhoe reopened the excavation and exposed the top of the tank. The contents were pumped into a C&O vacuum truck and later transferred to 55-gallon drums for temporary storage at Columbia Forge at N. Webb's instructions to C&O. Approximately 1550 gallons of oil was removed. The tank's dimensions were 12.5 feet long and about 5.8 feet wide. Its capacity was estimated by

C&O at 2500 gallons. Figure 6 shows a cross-sectional view of the tank in the excavation dug to remove it.

After the tank had been emptied and removed from the ground, the trackhoe was used to scrape away one foot of soil that had immediately underlain the tank. The trackhoe bucket was then used to sample soil at two locations at that horizon. Figure 7 shows the sample locations. These samples were named Tank 1 and Tank 2, "Tank" indicating that the soil sample was from the tank excavation. These samples were submitted for percent oil-and-grease testing. No evidence of the tank having leaked was observed. The tank did not have any observable holes in it, nor was there any oil staining or odor in the soil beneath the tank. However, a two-inch metal pipe was found paralleling the top of the tank, running in a northeast-southwest direction. It bent southeastward at the southern end of the excavation and disappeared into the earth at depth 3 feet. Soil surrounding the pipe was discolored and black. However, there was no odor. One sample was taken of the discolored soil at the southwestern corner of the excavation. It was named the "Tank 3" sample because it was the third soil sample collected from the tank excavation. The excavation was backfilled with the soil excavated from it and with crushed rock.

RESULTS OF FIELD INVESTIGATION

SAND-FILL GRAB SAMPLES; EP TOXICITY TESTING

The results of the EP Toxicity testing of the grab samples of the sand fill are in Appendix 6 (report dated November 13, 1987). None of the test parameters exceeded maximum allowed levels.

SUSPECTED UNDERGROUND STORAGE TANK PIPES

Water from three of the suspected fill/distribution pipes was tested for pH and specific conductance. The test results are in Appendix 6 (report dated December 30, 1987). Conductance ranged from 68 to 88 micromhos/cm; pH ranged from 5.5 to 5.9. These values suggested that the water in the pipes was not polluted. These results and the fact that the pipes did not go into tanks made it unlikely the pipes were in any way related to underground storage tanks. Proof of this was provided by a former employee of the sawmill, who said that the pipes were distribution lines for fire-protection systems at the former sawmill and planing mill.

GROUND WATER SAMPLES

Ground water from borings T-1 and T-2 was tested for nitrate-nitrogen, total organic carbon (TOC) and TOX. The results are in Appendix 6 (report dated January 11, 1988). The sample from T-1 does not show any obvious impacts on water quality due to the drainfield.

Two vertically overlapping water samples were taken immediately below the water table at T-2. The results for both samples are essentially identical, an expected result given the samples' vertical proximity. Both samples have larger TOC and TOX concentrations than at boring T-1, but neither sample shows any clear indication that shallow ground water has been affected by oil from the overlying sand fill, the bottom of which is 26 feet above the water table at the location of boring T-2.

TEST PIT 7 SOIL SAMPLES

S-1 400 ^{mg}/kg
S-2 500 ^{mg}/kg

Samples S-1 and S-2 were both tested for 1) weight-percent oil and grease, 2) TOX and 3) volatile organics (by EPA methods 8010 and 8020). Sample S-1 was also tested for PCBs. The results are in Appendix 6 (report dated January 19, 1988). Only sample S-1, of dry sand at depth 3 feet, shows any test constituent concentrations of note. The sample has a TOX concentration of 294 ppm and a total xylenes concentration of 310 ppb. The TOX concentration is not explained by the xylenes because xylenes do not contain halogens. This unexplained TOX value prompted an additional test on S-1 for PCBs. PCBs were measured as being <0.2 ppm. The TOX value remains unexplained.

UNDERGROUND STORAGE TANK AT TEST PIT 2

The results of tests on the contents of the tank were discussed in a preceding section. The contents did not fail the hazardous waste tests that were conducted and appeared to be diesel oil.

The two soil samples taken from a depth one foot below the bottom of the former tank and from discolored soil near the 2-inch pipe were tested for weight-percent oil and grease. The results are in Appendix 6.

The samples from beneath the tank, Tank 1 and Tank 2, had 0.01 and 0.02 percent oil and grease. Tank 3, the soil sample from near the 2-inch pipe, had 0.02 percent oil and grease. These low percentages indicate that there is no contamination problem due to potential past leaks from the tank.

CONCLUSIONS

1. The sand fill did not fail the EP Toxicity test.
2. A single sample of dry sand from TP-7 shows evidence of 1) contamination with xylenes and 2) potential contamination with halogenated compounds, as indicated by a TOX value of 294 ppm. The value is not explained by PCBs because a test on the sample did not detect PCBs.
3. Samples S-1 and S-2 from TP-7 are characterized by low weight percentages of oil and grease, and are not saturated. However, enough oil is present to create localized zones of oily water. The water is rain and/or runoff that has infiltrated the sand fill and become perched atop a clayey silt layer at depth 6 feet.
4. To fully determine the extent of any potential contamination problem with the sand fill requires that 1) additional exploration be done to determine the sand's areal extent and thickness and/or the presence of any other localized zones of oily water and 2) the sand be characterized chemically by determining the extent of oil and grease and the other compound(s) responsible for the TOX value observed in sample S-1 in TP-7.
5. Shallow ground water beneath the drainfield and sand-fill area shows no obvious impacts due to the drainfield and oil in the overlying sand fill, respectively. The water quality results from the sand-fill area are supported by the lack of evidence of oil staining in unsaturated soil beneath the sand fill and above the water table.

6. A geophysical survey located one underground storage tank. Its contents were not identified as hazardous waste, but instead appeared to be diesel. The tank was removed and its contents disposed of by C&O.
7. No impacts on soil and/or ground water quality due to offsite activities were investigated by field sampling and laboratory testing as part of this study.

LIMITATIONS

The analysis, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of these investigations. All work was carried out by or under the direction of a professional geologist. All work was completed to the normal standards of the profession and in accordance with generally accepted geological principles and practices. If, during additional investigation, data or conditions at the site differing materially from those indicated in this report are known or become available, Sweet-Edwards/EMCON should be contacted promptly to facilitate a review and investigation of those conditions in order to determine if any modifications of findings, conclusions and/or recommendations are warranted.

REFERENCE

Trimble, D.E., 1963, Geology of Portland, Oregon and adjacent areas: U.S. Geological Survey Bulletin 1119.

TABLE 1

INFORMATION SOURCES

Environmental Problems

Oregon Department of Environmental Quality--Underground Storage Tank Program and Northwest Region Office.

Geology/Hydrogeology

Trimble (1963)--General Site Area Geology

Oregon Water Resources Division--Water Well Records (on file at U.S. Geological Survey, Portland)

Land Use

City of Portland--Sewer Locations

Ted Haskill, Union Pacific Railroad (UPRR)--UPRR diesel pipeline near site

Former Employee of former onsite sawmill

Dave Aldrich, Transamerica Title--Title records

U.S. Army Corps of Engineers, Cartography and Remote Sensing Section--Historical aerial photographs

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TABLE 2
U.S. ARMY CORPS OF ENGINEERS
AERIAL PHOTOGRAPHS REVIEWED
FOR HISTORICAL LAND USES

YEAR	PHOTOGRAPH	SCALE
1936	38-5863	1:15,000
1939	4673	1:10,200
1940	40-5889	1:10,600
1948	589VV162PL, R391, 353 R6	Unknown
1957	57-3303	1:8,500
1961	61-1172	1:8,300
1963	63-2810	1:12,000
1967	67-955	1:12,000
1970	70-1058	1:25,000
1971	71-3292	1:3,000
1972	72-2795	1:6,000
1973	73-2192	1:24,000
1976	76-173	1:48,000
1977	77-485	1:24,000
1979	79-1636*	1:30,000
1980	80-285	1:12,000
1981	81-1536*	1:48,000
1983	83-1000*	1:24,000
1986	86-289	1:48,000

* Color infrared photograph. All others black and white.

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TABLE 3
LIST OF PAST ONSITE PROPERTY OWNERSHIP
BY BUSINESSES

Block 1

Oregon Barrel Co., Marine Iron Works, Star Sand Co., American Marine Iron Works, Western Wool Warehouse, Portland Manufacturing Co., Portland Wood Products, Portland Woolen Mills, Lawrence Warehouse Co.

Block 2

Oregon Barrel Co., Central Lumber Co., Marine Iron Works, St. Johns Lumber Co., Marine Iron Works, American Marine Iron Works, Western Wool Warehouse, Beaver-Linnton Mills, L.B. Menefee Lumber Co., Lawrence Warehouse Co., Portland Woolen Mills, Portland Spruce Mills

Block 3

Central Lumber Co., St. Johns Lumber Co., Beaver-Linnton Mills, L.B. Menefee Lumber Co., Portland Spruce Mills, Skookum (logging equipment), Portland Lumber Co., Portland Manufacturing Co., Simpson Lumber Co.

Block 4

St. Johns Lumber Co., Beaver-Linnton Mills, Portland Lumber Mills, Portland Manufacturing Co., Portland Spruce Mills

Block 7

Portland General Electric, Portland Railway, Light and Power Co., Peninsula Iron Works, Portland Lumber Mills, Brand S Corp.

Block 8

Portland Steel Shipbuilding, Portland Stove and Range Manufacturing Co., Portland Lumber Mills

River Lots

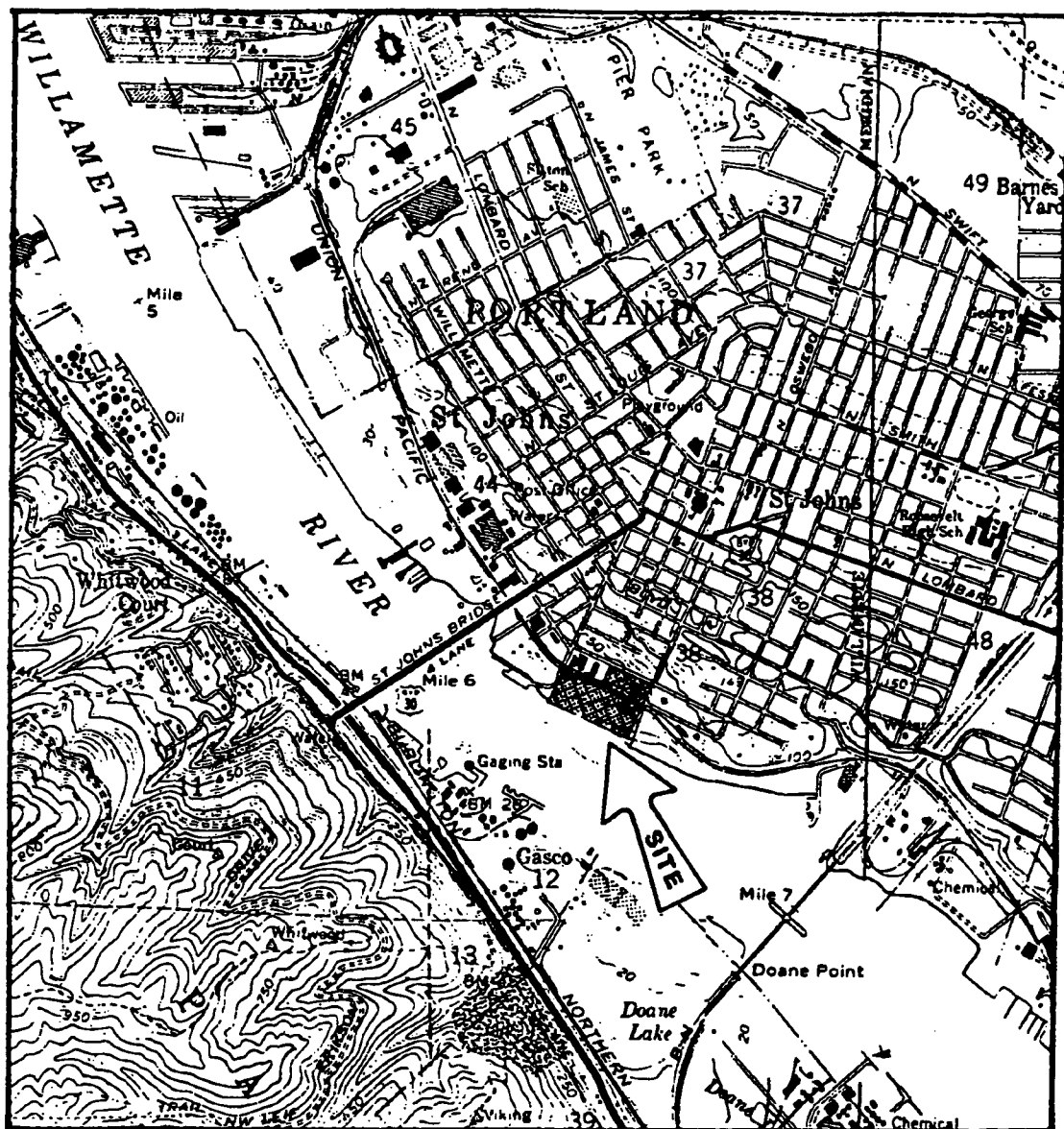
Oregon Barrel Co., Central Lumber Co., Marine Iron Works, American Marine Iron Works, St. Johns Lumber Co., Western Wool Warehouse, Beaver-Linnton Mills, L.B. Menefee Lumber Co., Portland Manufacturing Co., Portland Spruce Mills, Portland Wood Products Co.

TABLE 4
TEST PIT DESCRIPTIONS

TEST PIT	DEPTH (ft.)	DESCRIPTION
6	0-4	Black sand fill.
	4	Final depth; top of concrete slab.
7	0-3	Black sand fill.
	3-6	Mixed black sand fill, silt, and timber.
	6->6.5	Gray clayey silt.
8	0-1	Black sand fill.
	1	Final depth; top of concrete slab.
9	0-5	Black sand fill.
	5-8	Brown clayey, sandy silt.
10	0-10	Brown silt, sand, metal debris, and bricks.
11	0-1	Black sand fill.
	1-2	Mixed clayey silt, sand, cobbles, and bricks.

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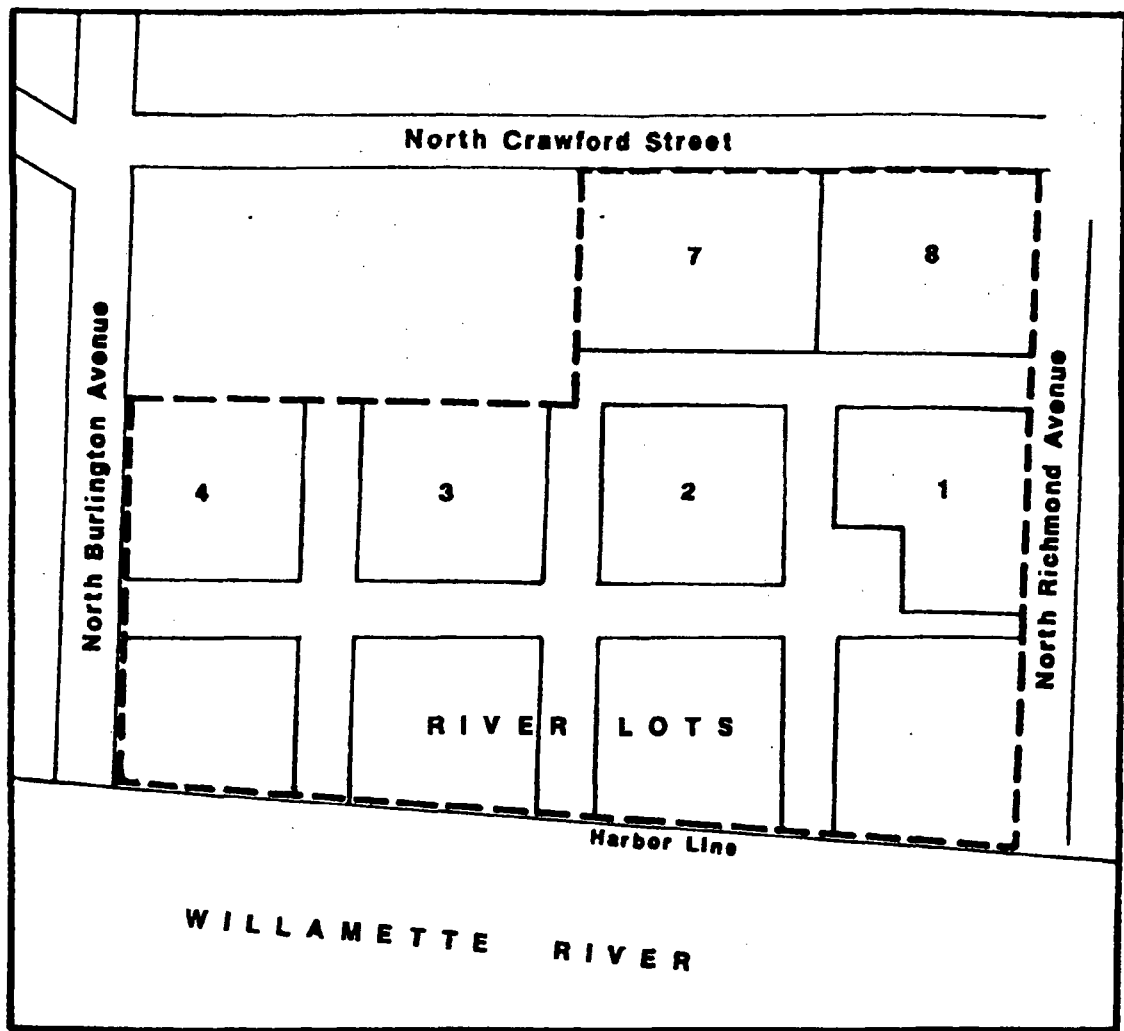


Base map U.S. Geological Survey Linton/Portland, Oregon 7.5-minute quad



MMI (Lampros Steel Site)	
Location Map	
Sweet-Edwards / EMCON, Inc.	
DRAWN BY	INITIALS DATE
CHECKED BY	2/1/88
REVISED	

Figure 1



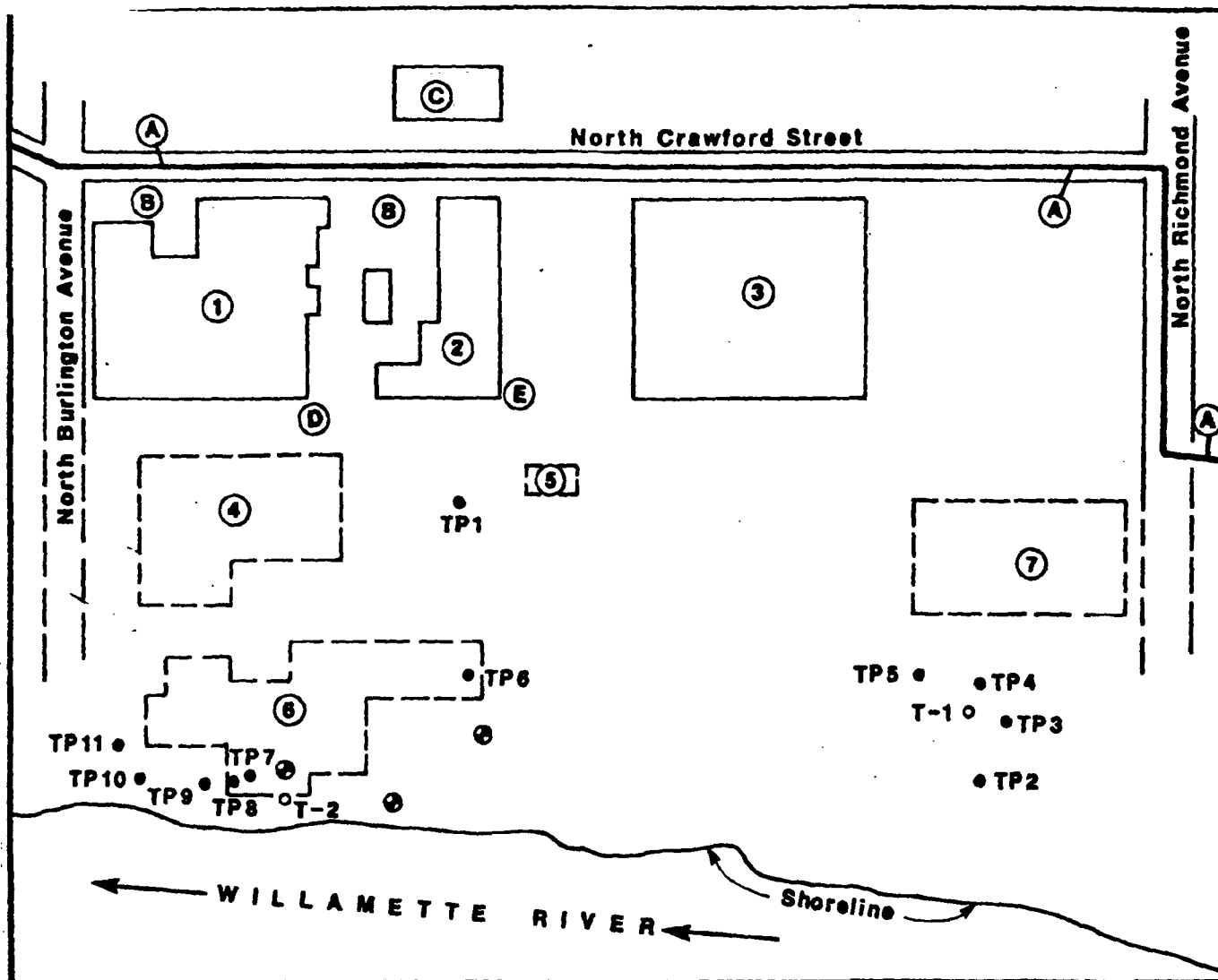
EXPLANATION

--- Site Boundary



MMI (Lampros Steel Site)		
Block and Lot Locations		
Sweet-Edwards / EMCON, Inc.		
DRAWN BY	INITIALS	DATE
CHECKED BY		2/2/88
REVISED		

Figure 2



EXPLANATION

POTENTIAL OFFSITE CONTAMINANT SOURCES

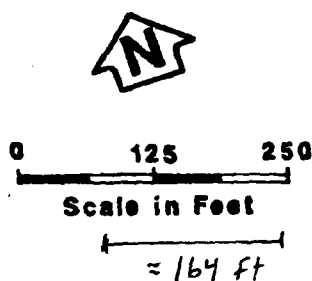
- (A) 8-inch Union Pacific Railroad diesel pipeline
- (B) Former underground storage tanks
- (C) Underground storage tank and steamcleaning area, St. Johns Truck Service
- (D) Oily soil and surface water runoff
- (E) Compressor-blowdown oil, Columbia Forge

CURRENT AND FORMER (F) BUSINESS BUILDING

- (1) Skookum (F), Asset Recovery, Columbia Forge
- (2) Columbia Forge
- (3) Dry Shed (F), warehouse
- (4) Planing Mill (F)
- (5) Chip Bin (F)
- (6) Sawmill (F)
- (7) Wool Scouring (F), plywood storage (F), "Fibron Insulation" (F)

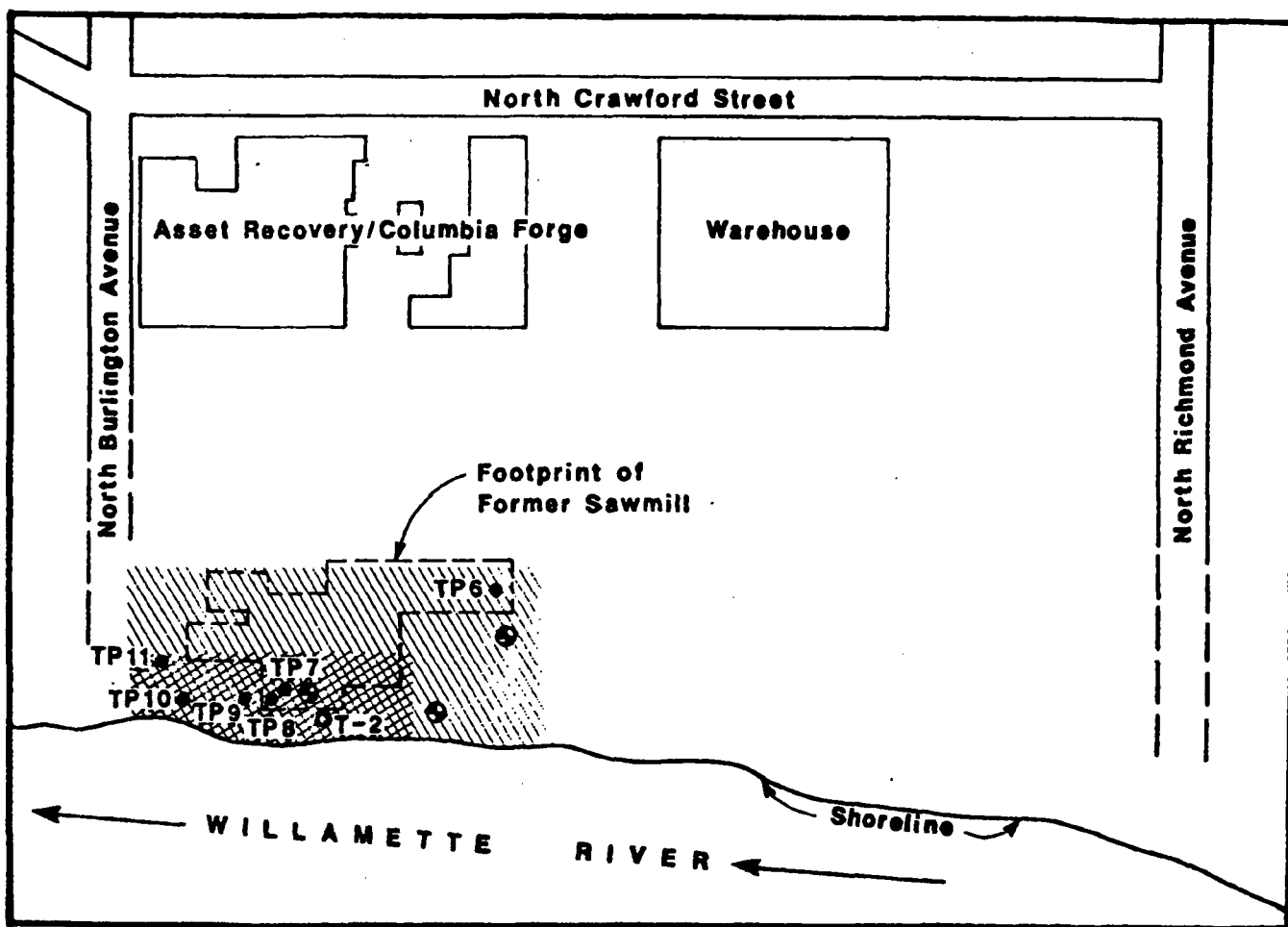
SAMPLE SITES

- Surface grab sample of sand fill. Samples composited for EP Toxicity Testing.
- Test Pit
- Test Boring





MMI (Lampros Steel Site)	
Site Map	
Sweet-Edwards / EMCON, Inc.	
DRAWN BY <u>if</u>	INITIALS <u>if</u> DATE <u>2/2/88</u>
CHECKED BY <u>if</u>	
REVISED	

Figure 3



Base From: Corps of Engineers aerial photograph 77-485 (9 May 1977)

EXPLANATION

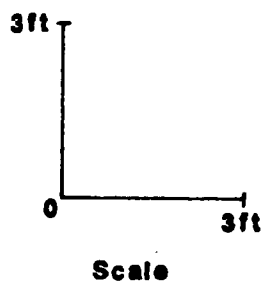
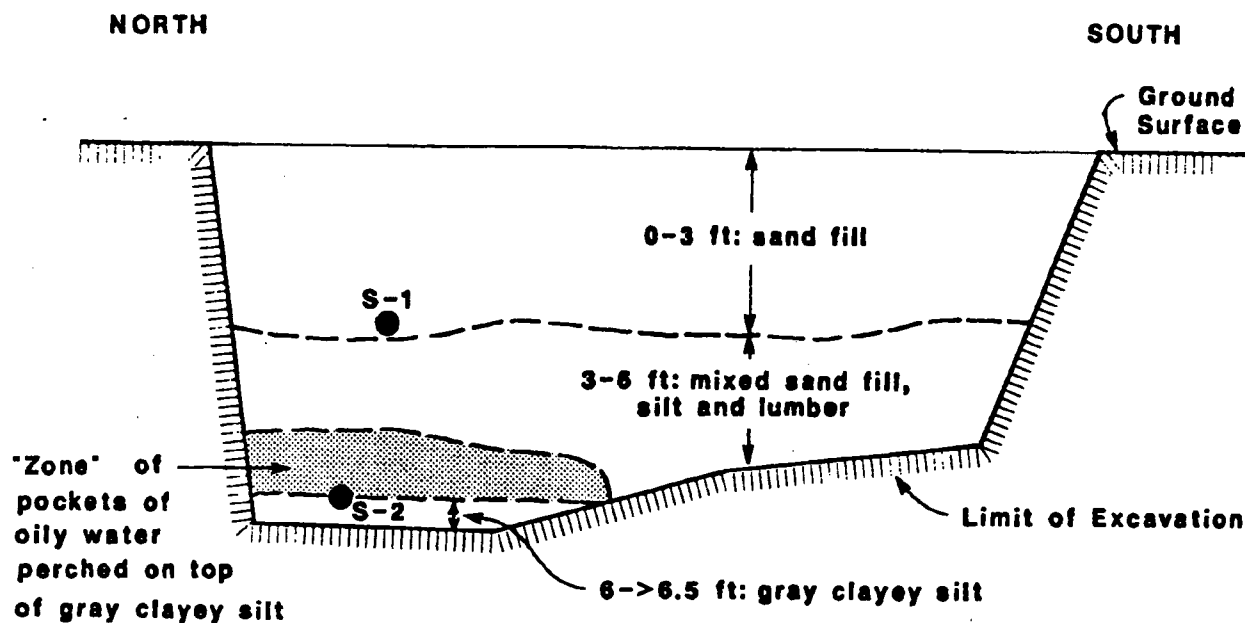
- Test Pit
- Reconnaissance Test Boring
- ⊙ Surface grab sample of sand fill.
Samples composited into single
sample for EP Toxicity Testing.
-  Approximate Maximum Area of Sand Fill
-  Approximate Area of Thickest
(>2-3 ft) of Sand Fill

0 125 250
Scale in Feet
≈ 171 ft.



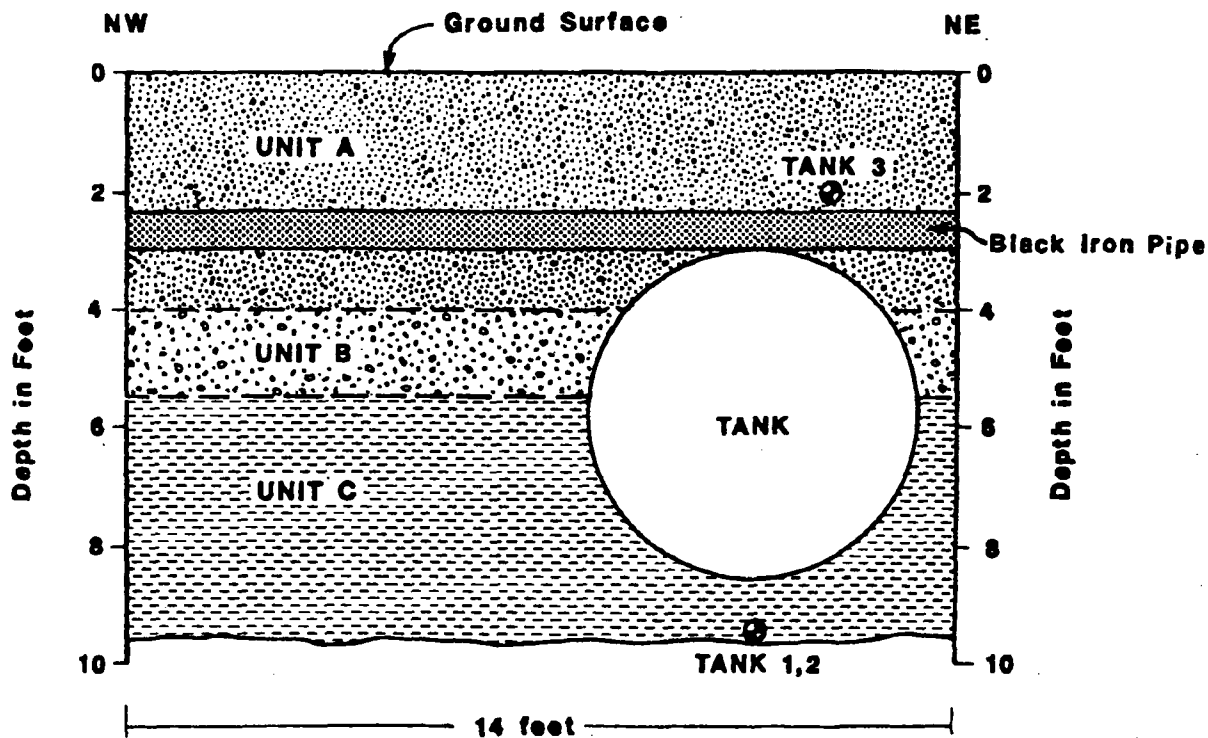
MMI (Lampros Steel Site)	
Test Pit, Reconnaissance Test Boring, Sand-Fill Area Locations	
Sweet-Edwards / EMCON, Inc.	
DRAWN BY <u>if</u>	DATE <u>2/2/88</u>
CHECKED BY <u>if</u>	
REVISED	

Figure 4



MMI (Lampros Steel Site)	
Cross Section, Test Pit 7, Sand-Fill Area	
Sweet-Edwards / EMCON, Inc.	
DRAWN BY <u>if</u>	INITIALS <u>if</u> DATE <u>2/2/98</u>
CHECKED BY <u>if</u>	
REVISED	

Figure 5



EXPLANATION

① Sample Location

UNIT A 0-4.0' GRAVELLY SAND, 30% rounded GRAVELS, 80% coarse to medium SAND, brown to dark brown, organics, dry to moist.

UNIT B 4.0-5.5' GRAVELLY SAND, 20% pebble size GRAVEL, 80% coarse to medium SAND, brown to dark brown, damp.

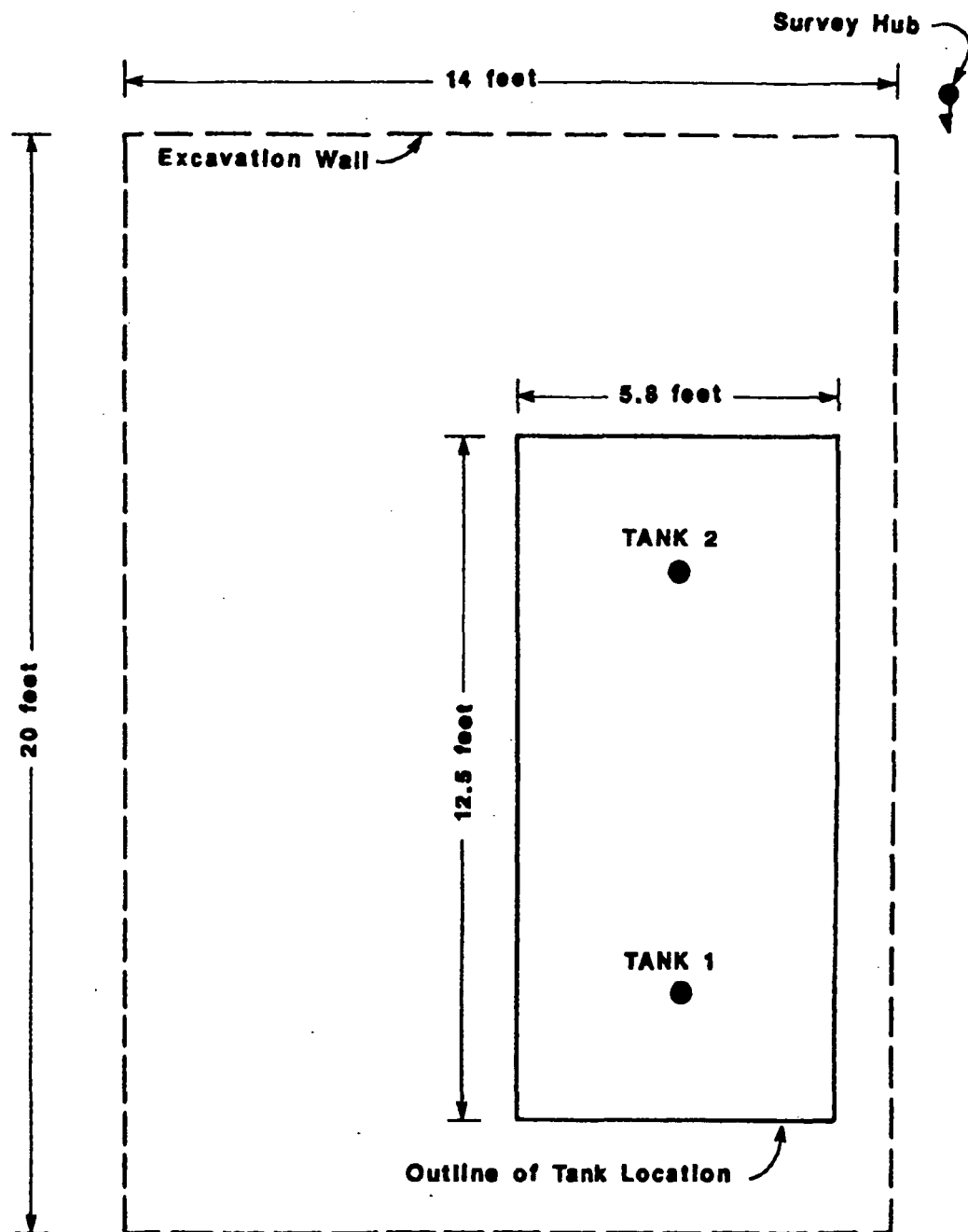
UNIT C 5.5-9.6' CLAYEY SILT, slightly plastic, 60-70% SILT, 30-40% CLAY, light brown, dense, moist.

TANK not to scale



MMI (Lampros Steel Site)	
Tank Excavation Cross Section	
Sweet-Edwards / EMCON, Inc.	
DRAWN BY <u>js</u>	INITIALS <u>js</u> DATE <u>3/1/83</u>
CHECKED BY <u>js</u>	
REVISED <u> </u>	

Figure 6



EXPLANATION

- Soil Sample Location Below Tank



MMI (Lampros Steel Site)

Plan View Tank Excavation

Sweet-Edwards / EMCON, Inc.

INITIALS DATE
 DRAWN BY *js* 1/25/88
 CHECKED BY *js*
 REVISED

Figure 7

APPENDIX 1

**Notification Forms and Laboratory Test Results
Asset Recovery/Columbia Forge Underground Storage Tanks**

LAMP2-TP.404bg

NOTIFICATION FOR UNDERGROUND STORAGE TANKS

APPROXIMATE LENGTH 10 PAGES

Send To: Oregon Department of Environmental Quality
Underground Storage Tank Program
P.O. Box 1760
Portland, Oregon 97207

LD. Number
STATE USE ONLY
Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify the State or local agencies of the existence of their tanks. Owner means—

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, is no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 5 or more beneath the ground. Some examples are underground tanks storing: gasoline, used oil, or diesel fuel, and 2. Industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;

3. septic tanks;

4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;

5. surface impoundments, pits, ponds, or lagoons;

6. storm water or waste water collection systems;

7. flow-through process tanks;

8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;

9. storage tanks situated in an underground area (such as a basement, cellar, mine-working drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed \$10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. This form must be completed for each location containing underground storage tanks. If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached.



I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)

COLUMBIA FORGE + MACH. WORKS
Street Address

8424 N. CRAWFORD

County

MULTNOMAH

City

PORTLAND

State

OR.

Zip Code

97203

Area Code Phone Number

(503) 286-3621

Type of Owner (Mark all that apply)

☒ Current

☐ Former

☐ State or Local Gov't.

☐ Federal Gov't.

☐ (GSA facility I.D. no.)

☒ Private or Corporate

☐ Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section I, mark box here ☒)

Facility Name or Company Site Identifier, as applicable

Street Address or State Road, as applicable

County

City (nearest)

State

Zip Code

Indicate number of tanks at this location 2

Mark box here if tank(s) are located on land within an Indian reservation or other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here ☒)

Job Title

HENRY STROMQUIST

GENERAL MANAGER

Area Code

(503)

Phone Number

286-3621

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI.)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative

HENRY STROMQUIST - GEN MGR

Signature

Henry Stromquist

Date Signed

1/19/87

CONTINUE ON REVERSE SIDE

Form 7530-1(11-85)

Please complete the voluntary UST Survey on Page 4.

CRAW00014640

FORCE

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential No. (e.g., 1,2,3...)	Tank No. <u>1</u>	Tank No. <u>2</u>	Tank No.	Tank No.	Tank No.
1. Status of Tank (Mark all that apply) <input type="checkbox"/> Currently in Use <input type="checkbox"/> Temporarily Out of Use <input checked="" type="checkbox"/> Permanently Out of Use <input type="checkbox"/> Brought into Use after 5/8/86	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2. Estimated Age (Years)	<u>19</u>	<u>35</u>			
3. Estimated Total Capacity (Gallons)	<u>1000</u>	<u>1000</u>			
4. Material of Construction (Mark one <input type="checkbox"/>) <input type="checkbox"/> Steel <input type="checkbox"/> Concrete <input type="checkbox"/> Fiberglass Reinforced Plastic <input type="checkbox"/> Unknown Other, Please Specify _____	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5. Internal Protection (Mark all that apply <input type="checkbox"/>) <input type="checkbox"/> Cathodic Protection <input type="checkbox"/> Interior Lining (e.g., epoxy resins) <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Other, Please Specify _____	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6. External Protection (Mark all that apply <input type="checkbox"/>) <input type="checkbox"/> Cathodic Protection <input type="checkbox"/> Painted (e.g., asphaltic) <input type="checkbox"/> Fiberglass Reinforced Plastic Coated <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Other, Please Specify _____	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
7. Piping (Mark all that apply <input type="checkbox"/>) <input checked="" type="checkbox"/> Bare Steel <input type="checkbox"/> Galvanized Steel <input type="checkbox"/> Fiberglass Reinforced Plastic <input type="checkbox"/> Cathodically Protected <input type="checkbox"/> Unknown Other, Please Specify _____	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply <input type="checkbox"/>) a. Empty <input type="checkbox"/> b. Petroleum <input type="checkbox"/> Diesel <input type="checkbox"/> Kerosene <input type="checkbox"/> Gasoline (including alcohol blends) <input checked="" type="checkbox"/> Used Oil Other, Please Specify <u>SINKER OIL</u> c. Hazardous Substance Please Indicate Name of Principal CERCLA Substance or Chemical Abstract Service (CAS) No. Mark box <input type="checkbox"/> if tank stores a mixture of substances d. Unknown <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <u>SINKER OIL</u> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <u>SINKER OIL</u> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <u>SINKER OIL</u> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <u>SINKER OIL</u> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <u>SINKER OIL</u> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Additional Information (for tanks permanently taken out of service) a. Estimated date last used (mo/yr) Estimate quantity of substance remaining (gal.) c. Mark box <input type="checkbox"/> if tank was filled with inert material (e.g., sand, concrete)	<u>1975</u> <u>100</u> <input type="checkbox"/>	<u>1960</u> <u>EMPTY</u> <input checked="" type="checkbox"/>	<u>1</u> <u>1</u> <input type="checkbox"/>	<u>1</u> <u>1</u> <input type="checkbox"/>	<u>1</u> <u>1</u> <input type="checkbox"/>

Form 7530-1 (11-85) Reverse

THANK YOU FOR YOUR ASSISTANCE

OREGON UNDERGROUND STORAGE TANK (UST) SURVEY

The underground storage tank program will soon include performance standards for new tanks and regulations for leak detection/prevention and corrective actions which will affect owners and operators of underground storage tanks. In preparation for these new requirements, the Department has prepared a state-wide survey. The Department requests that owners of underground storage tanks complete the survey questions.

Your response to these questions will assist the Department in developing a cost-effective and responsive state-wide regulatory program. In addition, owners of underground storage tanks may find the survey useful in the management of such tanks.

INSTRUCTIONS

Please type or print in ink all items. Please complete one survey form for each location containing underground storage tanks. Tank I.D. should correspond to Tank I.D. on EPA form 7530-1 for the respective facility location. If more than five tanks are owned at this location, photocopy this survey or request additional forms from DEQ, and staple continuation sheets to this survey.

Tank Identification No.	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank (Check One) If temporarily out of use, Estimated time out of use: 1 month - 6 months 6 months - 1 year 1 year - 5 years 5 years or more Estimated date to be brought back into use (mo/yr)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1
2. Was tank new at time of installation? (Y/N)	UNKNOWN	UNKNOWN			
3. Containment Systems (check one) Single-walled tank Double-walled tank Pit-lining system Unknown	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4. Leak Detection System (check all that apply) Visual Stock inventory Tile drain Vapor wells Sensor instrument (specify type): In-ground detector Within walls of double-walled tank Ground water monitoring wells Continuous in piping Pressure test Internal inspection Other, specify None Unknown	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5. Overfill Protection (Yes/No)	NO	NO			
6. Location of Piping (check all that apply) No parts in contact with soil Parts contacting the soil which are: Unprotected metal Made of corrosion resistant materials Corrosion-resistant coated Cathodically protected Double-walled Within a secondary containment Interior lined Unknown	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
7. History of Tank Repairs (check one except as indicated) If tank repaired, indicate date of last repairs (mo/yr) None Unknown	 <input checked="" type="checkbox"/> <input type="checkbox"/>	 <input checked="" type="checkbox"/> <input type="checkbox"/>	 <input type="checkbox"/> <input type="checkbox"/>	 <input type="checkbox"/> <input type="checkbox"/>	 <input type="checkbox"/> <input type="checkbox"/>
8. History of Pipe Repairs (check one except as indicated) If pipe repaired, indicate date (mo/yr) None Unknown	 <input checked="" type="checkbox"/> <input type="checkbox"/>	 <input checked="" type="checkbox"/> <input type="checkbox"/>	 <input type="checkbox"/> <input type="checkbox"/>	 <input type="checkbox"/> <input type="checkbox"/>	 <input type="checkbox"/> <input type="checkbox"/>

THANK YOU FOR YOUR ASSISTANCE

Notification for Underground Storage Tanks

U.S. EPA FORM 86-100
APPROVAL EXPIRES 6-30-88

Oregon Department of Environmental Quality
Underground Storage Tank Program
P.O. Box 1760
Portland, Oregon 97207

STATE USE ONLY
L.D. Number
Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify State or local agencies of the existence of their tanks. Owner means—
a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and
b) in the case of any underground storage tank in use before November 8, 1984, no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 5 or more beneath the ground. Some examples are underground tanks storing gasoline, used oil, or diesel fuel, and 2. Industrial solvents, pesticides, herbicides or fungicides.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:
1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;

3. septic tanks;

4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;

5. surface impoundments, pits, ponds, or lagoons;

6. storm water or waste water collection systems;

7. flow-through process tanks;

8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;

9. storage tanks situated in an underground area (such as a basement, cellar, mineworking drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed \$10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. This form must be completed for each location containing underground storage tanks. If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached. 0

I. OWNERSHIP OF TANK(S)

II. LOCATION OF TANK(S)

Owner Name (If corporation, individual, public agency, or other entity)

(If same as Section I, mark box here ☐)

Facility Name or Company Site Identifier, as applicable

CRAWFORD STREET CORP.
Street Address

CRAWFORD STREET CORP.
Street Address or State Road, as applicable

4927 NW FRONT AVE
City

8524 N. CRAWFORD
City

MULTNOMAH
County

MULTNOMAH
County

PORTLAND State OR Zip Code 97210

PORTLAND State OR Zip Code 97203

NA Code Phone Number
(503) 227-4313

Type of Owner (Mark all that apply ☐)

Indicate number of tanks at this location 1

Mark box here if tank(s) are located on land within an Indian reservation or other Indian trust lands ☐

Current
Former

☐ State or Local Gov't
☐ Federal Gov't
☐ (GSA facility I.D. no.)

☒ Private or Corporate
☐ Ownership uncertain

III. CONTACT PERSON AT TANK LOCATION

Name (if same as Section I, mark box here ☐)

Job Title

Area Code

Phone Number

HENRY STROMQUIST GENERAL MANAGER (503) 286-3621

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI.)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative

Signature

Date Signed

HENRY STROMQUIST - GEN. MGR. [Signature] 1/19/87

CONTINUE ON REVERSE SIDE

Form 753D-1 (11-85)

Please complete the voluntary UST Survey on Page 4.

CRAW00014643

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential No. (e.g., 1,2,3...)	Tank No.	Tank No.	Tank No.	Tank No.	Tank No.
1. Status of Tank (Mark all that apply) <input type="checkbox"/> Currently in Use <input type="checkbox"/> Temporarily Out of Use <input checked="" type="checkbox"/> Permanently Out of Use <input type="checkbox"/> Brought into Use after 5/8/86	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2. Estimated Age (Years)	<u>50</u>				
3. Estimated Total Capacity (Gallons)	<u>5000</u>				
4. Material of Construction (Mark one <input type="checkbox"/>) <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Concrete <input type="checkbox"/> Fiberglass Reinforced Plastic <input type="checkbox"/> Unknown Other, Please Specify _____	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5. Internal Protection (Mark all that apply) <input type="checkbox"/> Cathodic Protection <input type="checkbox"/> Interior Lining (e.g., epoxy resins) <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Other, Please Specify _____	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6. External Protection (Mark all that apply) <input type="checkbox"/> Cathodic Protection <input type="checkbox"/> Painted (e.g., asphaltic) <input type="checkbox"/> Fiberglass Reinforced Plastic Coated <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Other, Please Specify _____	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
7. Piping (Mark all that apply <input type="checkbox"/>) <input checked="" type="checkbox"/> Bare Steel <input type="checkbox"/> Galvanized Steel <input type="checkbox"/> Fiberglass Reinforced Plastic <input type="checkbox"/> Cathodically Protected <input type="checkbox"/> Unknown Other, Please Specify _____	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply <input type="checkbox"/>) a. Empty <input checked="" type="checkbox"/> b. Petroleum <input type="checkbox"/> <input checked="" type="checkbox"/> Diesel <input type="checkbox"/> Kerosene <input type="checkbox"/> Gasoline (including alcohol blends) <input type="checkbox"/> Used Oil Other, Please Specify _____ c. Hazardous Substance Please Indicate Name of Principal CERCLA Substance _____ or Chemical Abstract Service (CAS) No. _____ Mark box <input type="checkbox"/> if tank stores a mixture of substances d. Unknown <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Additional Information (for tanks permanently taken out of service) a. Estimated date last used (mofyr) <u>6/1/85</u> Estimate quantity of substance remaining (gal.) <u>EMPTY</u> c. Mark box <input type="checkbox"/> if tank was filled with inert material (e.g., sand, concrete)	<u>6/1/85</u> <u>EMPTY</u> <input type="checkbox"/>	<u>1</u> <u>1</u> <input type="checkbox"/>	<u>1</u> <u>1</u> <input type="checkbox"/>	<u>1</u> <u>1</u> <input type="checkbox"/>	<u>1</u> <u>1</u> <input type="checkbox"/>

orm 7530-1 (11-85) Reverse

THANK YOU FOR YOUR ASSISTANCE

CRAW00014644

OREGON UNDERGROUND STORAGE TANK (UST) SURVEY

The underground storage tank program will soon include performance standards for new tanks and regulations for leak detection/prevention and corrective actions which will affect owners and operators of underground storage tanks. In preparation for these new requirements, the Department has prepared a state-wide survey. The Department requests that owners of underground storage tanks complete the survey questions.

Your response to these questions will assist the Department in developing a cost-effective and responsive state-wide regulatory program. In addition, owners of underground storage tanks may find the survey useful in the management of such tanks.

INSTRUCTIONS

Please type or print in ink all items. Please complete one survey form for each location containing underground storage tanks. Tank I.D. should correspond to Tank I.D. on EPA form 7530-1 for the respective facility location. If more than five tanks are owned at this location, photocopy this survey or request additional forms from DEQ, and staple continuation sheets to this survey.

Tank Identification No.	Tank No.	Tank No.	Tank No.	Tank No.	Tank No.
1. Status of Tank (Check One) If temporarily out of use, Estimated time out of use: 1 month - 6 months <input type="checkbox"/> 6 months - 1 year <input type="checkbox"/> 1 year - 5 years <input checked="" type="checkbox"/> 5 years or more <input type="checkbox"/> Estimated date to be brought back into use (mo/yr) <u>1/1</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Was tank new at time of installation? (Y/N) <u>Y</u>	<u>Y</u>	<u>Y</u>	<u>Y</u>	<u>Y</u>	<u>Y</u>
3. Containment Systems (check one) Single-walled tank <input checked="" type="checkbox"/> Double-walled tank <input type="checkbox"/> Pit-lining system <input type="checkbox"/> Unknown <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Leak Detection System (check all that apply) Visual <input type="checkbox"/> Stock inventory <input type="checkbox"/> Tile drain <input type="checkbox"/> Vapor wells <input type="checkbox"/> Sensor instrument (specify type): In-ground detector <input type="checkbox"/> Within walls of double-walled tank <input type="checkbox"/> Ground water monitoring wells <input type="checkbox"/> Continuous in piping <input type="checkbox"/> Pressure test <input type="checkbox"/> Internal inspection <input type="checkbox"/> Other, specify <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Overfill Protection (Yes/No) <u>Unknown</u>	<u>Unknown</u>	<u>Unknown</u>	<u>Unknown</u>	<u>Unknown</u>	<u>Unknown</u>
6. Location of Piping (check all that apply) No parts in contact with soil <input type="checkbox"/> Parts contacting the soil which are: Unprotected metal <input checked="" type="checkbox"/> Made of corrosion resistant materials <input type="checkbox"/> Corrosion-resistant coated <input type="checkbox"/> Cathodically protected <input type="checkbox"/> Double-walled <input type="checkbox"/> Within a secondary containment <input type="checkbox"/> Interior lined <input type="checkbox"/> Unknown <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. History of Tank Repairs (check one except as indicated) If tank repaired, indicate date of last repairs (mo/yr) <u>1/1</u> None <input checked="" type="checkbox"/> Unknown <input type="checkbox"/>	<u>1/1</u>	<u>1/1</u>	<u>1/1</u>	<u>1/1</u>	<u>1/1</u>
8. History of Pipe Repairs (check one except as indicated) If pipe repaired, indicate date (mo/yr) <u>1/1</u> None <input checked="" type="checkbox"/> Unknown <input type="checkbox"/>	<u>1/1</u>	<u>1/1</u>	<u>1/1</u>	<u>1/1</u>	<u>1/1</u>

THANK YOU FOR YOUR ASSISTANCE



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 13, 1987
Log #A870305-I
PO#: 2789

Columbia Forge & Machine
8434 N. Crawford St.
Portland, Oregon 97203

ATTENTION: John Shore

SUBJECT: EP TOXICITY ANALYSIS

*SOIL BENEATH DIESEL TANK,
COLUMBIA FORGE*

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980,
Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: 8000 gal Tank, 3/5/87
Collected by: Sample collected and delivered by client.

Sample Received: March 5, 1987

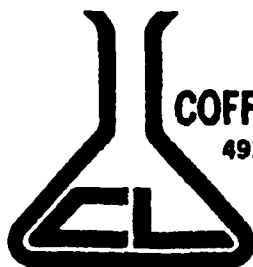
ANALYSIS	RESULTS	LIMIT
-----	-----	-----
Arsenic	< 0.100	5.0
Barium	0.028	100
Cadmium	0.015	1.0
Chromium	< 0.010	5.0
Lead	< 0.100	5.0
Mercury	< 0.100	0.2
Selenium	< 0.100	1.0
Silver	< 0.010	5.0

< denotes "less than" the detection limit for the method.
Results are reported in milligrams per liter (mg/L)

REPORT CONTINUES

*Weed strip - liquid
initial test
(no rxn)*

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

March 13, 1987

Log #AE700305-I

PO#: 2789

Columbia Forge & Supply

Page Two

Attention: John Shore

Analysis Requested: Solvent Scan

Sample ID: 8000 gal. Tank

Sample Received: March 5, 1987

~~CONTENTS~~
DIESEL TANK, COLUMBIA FORGE

ANALYSIS

RESULTS

Acetone	< 500
1,1,2,2-Tetrachloroethane	< 100
m-Dichlorobenzene	< 100
n-Butyl acetate	< 100
o-Dichlorobenzene	< 100
Chlorobenzene	< 100
Diethyl ether	< 500
Ethanol	< 500
Ethyl acetate	< 500
Ethyl benzene	< 100
Freon 113	< 100
Isopropyl alcohol	< 500
Methanol	< 500
Methyl ethyl ketone	< 300
Methyl isobutyl ketone	< 100
Methylene chloride	< 100
Tetrachloroethylene	< 100
Toluene	< 100
Trichloroethylene	< 100
1,1,1-Trichloroethane	< 100
Xylenes	< 100

Results in mg/L

Analysis by carbon disulfide extraction, GC/FID and methanol extraction GC/MSD.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

REPORT CONTINUES

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 13, 1987
Log #A870305-I
PO#: 2789

Columbia Forge & Machine
Page Three

Attention: John Shore

Sample ID: 8000 gal. Tank

Sample Date: March 5, 1987

Sample Received: March 5, 1987

CONTENTS, DIESEL TANK, COLUMBIA
PAGE

ANALYSIS	METHOD	RESULTS
Flash Point	ASTM D97-77	> 150 degrees F
Diesel	*	4300 mg/L
Polychlorinated Biphenyls	**	< 1 mg/kg
Reactivity	---	None Detected
Corrosivity	---	None Detected

* Analysis by Methylene chloride extraction, capillary GC/FID.

** Analysis by GC/ECD and comparison with standard Aroclor solutions.

> denoted "greater than"

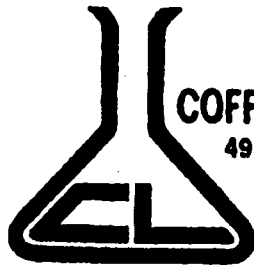
The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Sincerely,

Susan M. Coffey
Susan M. Coffey,
President

SMC/gs

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

March 19, 1987

Log #A870316-B1-2

PO#: 2842

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Sample ID: #1 - Skookum, 3/13/87
#2 - Yard, 3/13/87

Samples Received: March 13, 1987

Samples Collected by: Crosby & Overton

ANALYSIS

Gasoline*

< 1.0

16**

Diesel*

< 1.0

< 1.0

Lead

30.0

Results in mg/kg

* Analysis by extraction capillary GC/FID.

** Appears to contain some other high boiling oil and possibly some kerosene.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved by,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

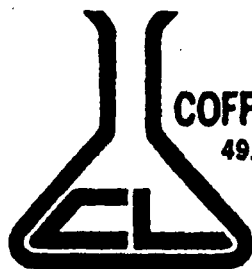
\$285 CF+mw

3200 Crawford

Soil ANALYSIS. #1 = Diesel tank at Skookum. #2 = gasoline tank @ Columbia Forge

CO. FORD/CRANE
SAMPLE #2

Soil analysis
Yard & Skookum



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

March 24, 1987

Log #A870309-F

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

SOIL BENEATH GASOLINE TANK,
COLUMBIA FORGE

ATTENTION: John Shore

SUBJECT: EP TOXICITY ANALYSIS

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980,
Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: #2 Tank, 3/9/87, 1230
Collected by: Sample collected and delivered by client.

Sample Received: March 9, 1987

ANALYSIS	RESULTS	LIMIT
-----	-----	-----
Arsenic	< 0.100	5.0
Barium	0.031	100
Cadmium	< 0.010	1.0
Chromium	< 0.010	5.0
Lead	< 0.100	5.0
Mercury	< 0.100	0.2
Selenium	< 0.100	1.0
Silver	< 0.010	5.0

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Results are reported in milligrams per liter (mg/L)

REPORT CONTINUES

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

*Crawford
0800-*

March 24, 1987

Log #A870316-B1-2

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

ATTENTION: John Shore

*SOIL BENEATH GASOLINE TANK, COLUMBIA
FORGE*

SUBJECT: EP TOXICITY ANALYSIS

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980,
Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: #2 - Yard
Collected by: Sample collected and delivered by client.

Sample Received: March 16, 1987

ANALYSIS -----	RESULTS -----	LIMIT -----
Lead	< 0.100	5.0

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Results are reported in milligrams per liter (mg/L)

Sincerely,

Susan M. Coffey
Susan M. Coffey,
President

SMC/gs

*checked with Mr. Lora
OK
file in 1 or
done 5/1*

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

March 24, 1987

Log #A870319-K

PO#: 2864

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Analysis Requested: Total Hydrocarbons

Sample ID: #3 Weld Shop

Sample Date: March 19, 1987

Sample Received: March 19, 1987

ANALYSIS

Gasoline

Diesel

RESULTS

< 4 mg/kg

< 4 mg/kg

Analysis by capillary GC/FID

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

SMC/ga

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

*Soil analysis
Weld Shop
(no rush)*

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

March 24, 1987

Log #A870309-P

Columbia Forge & Machine
Page Two

Attention: John Shore

Analysis Requested: Solvent Scan

Sample ID: #2 Tank, 3/9/87, 1230

Sample Received: March 9, 1987

CONTENTS / DIESEL TAN
COLUMBIA
FORGE

ANALYSIS

RESULTS

Acetone	< 500
Chlorobenzene	< 100
M-Dichlorobenzene	< 100
O-Dichlorobenzene	< 100
Ethanol	< 500
Ethyl benzene	< 100
Freon 113	< 100
Isopropyl alcohol	< 500
Methanol	3600
Methylene chloride	< 100
Methyl ethyl ketone	< 300
Methyl isobutyl ketone	< 200
1,1,2,2-Tetrachloroethane	< 100
Tetrachloroethylene	< 100
Toluene	< 100
1,1,1-Trichloroethane	< 100
Trichloroethylene	< 100
Xylene	< 300

Results in mg/L

Analysis by carbon disulfide extraction, GC/FID and methanol extraction GC/HECD.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

REPORT CONTINUES

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

Crawford

March 24, 1987

Log #A870309-P

Columbia Forge & Machine
Page Three

Attention: John Shore

Sample ID: #2 Tank, 3/9/87, 1230

Sample Received: March 9, 1987

*CONTENTS, DIESEL TANK,
COLUMBIA P266*

ANALYSIS	METHOD	RESULTS
Flash Point	ASTM D97-77 Closed-cup	> 150 degrees F
Reactivity	---	None
Corrosivity	---	None
Gasoline	*	5.0 mg/L
Diesel	*	< 1.0 mg/L

* Analysis by extraction capillary GC/FID.

> denotes "greater than"

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante
Susan M. Brillante,
Laboratory Director

SMC/gs

Sincerely,

Susan M. Coffey
Susan M. Coffey
President

*liquid yard
not rush*

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.

CRAW00014654

APPENDIX 2
Sampling Methods

LAMP2-TP.404bg

APPENDIX 2

SAMPLING METHODS

Water Samples; Suspected Fill/Distribution Tank Pipes

The four water samples collected from the suspected tank fill/distribution pipes at the former sawmill and planing mill were collected using a single check-valve Teflon bailer. Monofilament nylon ("Weedeater") cord was used to lower the bailer in and out of the pipes. The bailer and cord were cleaned before use in each pipe by disassembling the bailer and washing it and the cord with 1) a dilute non-phosphatic detergent solution, 2) a rinse with distilled water, 3) a rinse with methanol, and 4) a final rinse with distilled water. The bailer was also rinsed once with sample water before filling any sample bottles. The tested samples are named AT-1, AT-2, and AT-3. The "AT" means "assumed tank"; the number indicates sample location in the serial order the location was sampled.

Boring and Soil Sample Nomenclature

The borings are named T-1 and T-2. The "T" denotes that it was a reconnaissance, or "test," boring; the number designates the serial order in which the borings were drilled. Soil samples from the borings were labelled S-1, S-2, etc., the "S" indicating a soil sample and the number designating the serial order in which the samples were collected. The shallowest sample is labelled S-1. Soil samples from test pit 7 were named in the same manner.

LAMP2-APP.226bg

Drilling Method

The borings were drilled using a truck-mounted CME 55 drilling rig equipped with 3.75-in inside-diameter hollow-stem auger. The rig and crew were from Geo-Tech Explorations (North Plains, OR). The drill rig, downhole equipment and hand tools that contacted the rig or downhole equipment were steam cleaned onsite before drilling the boring. The water used for steam cleaning was obtained from a faucet at Columbia Forge and was stored in a water tank on the rig prior to use.

Soil samples were collected at five-foot intervals using standard split-spoon samplers. The samplers were pushed, not driven, into the soil. The samplers were steam cleaned before their initial use and between borings, but were washed with tap water from the drill rig's water tank between the collection of individual samples in each boring.

The samples were described and logged in the field by a Sweet-Edwards/EMCON geologist. Each sample was described as to soil type(s), moisture content, geologic bedding, its content of manmade objects and its appearance with respect to possible visual evidence of contamination. Each soil sample was placed in a separate "Ziplock"-style plastic bag, labelled as to identity, project and date of collection. The samples were archived.

After the borings were drilled to their final depths and had been sampled for ground water, the borings were abandoned by backfilling with Baroid-brand bentonite chips. The chips were placed by slowly pouring them down the inside of the auger and gradually backpulling the auger until all auger was out of the ground and the boring filled to within one foot of the ground surface. The remaining foot was filled with soil. Cuttings from the borings were left by the boreholes and were smoothed out on the ground using shovels.

LAMP2-APP.226bg

Ground Water Sampling Method

Once the water table was reached, as judged by the moisture content of soil samples and drill cuttings, the borings were deepened to provide about four feet of water inside the auger. A small-diameter metal dart-valve bailer was tripped in and out of the auger several times to remove thick, slurry-like cuttings before collecting the ground water samples. A single check-valve Teflon bailer was lowered into the auger to fill with water for the purpose of collecting the actual samples. The bailer was then withdrawn from the auger; its contents were then poured into the sample containers. Monofilament nylon ("Weedeater") cord was used to lower the bailer in and out of the auger. A second water sample was taken at boring T-2. After the first sample was taken, T-2 was deepened 10 feet. However, the driller mistakenly pulled back the auger too much and the bottom of the unsupported borehole collapsed. The result was that the second water sample at T-2 was taken from a shallower depth than originally intended and in fact partly overlapped the depth from which the first sample was taken.

All ground water sampling equipment was cleaned before use by disassembling it and washing it with a dilute non-phosphatic detergent solution, rinsing with distilled water, rinsing with methanol, and rinsing again with distilled water. This applied to the Teflon bailer and the cord used to lower it. The bailer was also rinsed once with sample water before filling any sample bottles.

After collection, the sample bottles were stored on ice and transported to Columbia Analytical Services. Chain of Custody forms were used to track handling of the samples; the relevant custody forms are attached in the original laboratory reports in Appendix 6.

LAMP2-APP.226bg

APPENDIX 3
Boring Logs

LAMP2-TP.404bg

PROJECT MMI (Lampros Steel Site)Page 1 of 2Location See planBoring No. T-1Surface Elevation Approximately 30ft.Drilling Method Hollow-stem augerTotal Depth 41 ft.Drilled By Geo-Tech ExplorationsDate Completed January 4, 1988Logged By J. Morales



WELL DETAILS	PENE- TRATION TIME/ RATE	DEPTH (FEET)	SOIL SAMPLE		WATER SAMPLE	SYMBOL	LITHOLOGIC DESCRIPTION	WATER LEVEL
			NO.	TYPE				
Backfilled with bentonite chips								
		-5	S1	SS			4.5-6.0' SILT, 10-15% fine sand, light brown, slightly moist. Dark gray 5.2-6.0 ft. with wood fragments.	
		-10	S2	SS			9.5-10.0' SILT, 10-15% fine sand, light brown, slightly moist. Grades down to sand.	
							10-10.5' FINE SAND, 5-15% silt, <5% clay, light brown, slightly moist, color banding.	
		-15	S3	SS			14.5-16.0' SILTY FINE SAND, 30-35% silt, light brown to dark gray, dry, micaceous, sandier with depth.	
		-20	S4	SS			19.5-21.0' SILTY FINE SAND, 20-30% silt, green-brown, moist, bedded with bed contact at 20.5 ft.	
		-25	S5	SS			24.5-26.0' SANDY SILT, 20% fine sand, brown-green, moist, local laminations, root traces, micaceous.	
		-30	S6	SS			29.5-31.0' CLAYEY SILT, 20% clay, brown-green, moist, less clayey with depth.	
		-35						
								34 ft. below ground

SEA-300-02a



Sweet, Edwards & Associates, Inc.

BORING LOGPROJECT MMI (Lampros Steel Site)Page 2 of 2Boring No. T-1

WELL DETAILS	PENE- TRATION TIME/ RATE	DEPTH (FEET)	SOIL SAMPLE		WATER SAMPLE	SYMBOL	LITHOLOGIC DESCRIPTION	WATER LEVEL
			NO.	TYPE				
Backfilled with bentonite chips		35	S7	SS	W-1		34.5-36.0' CLAYEY SILT, <10% fine sand, 60-70% silt, 20-30% clay, brown-green, saturated, mottled.	
		40	S8	SS			39.5-41.0' FINE SAND, 10% silt, blue-green, saturated, micaceous.	
		45					SS - Split Spoon Sample. All soil samples taken by pushing sampler into ground.	

SEA-300-02b

CRAW00014661

PROJECT MMI (Lampros Steel Site)Page 1 of 2Location See planBoring No. T-2Surface Elevation Approximately 30ft.Drilling Method Hollow-stem augerTotal Depth 44.5 ft.Drilled By Geo-Tech ExplorationsDate Completed January 4, 1988Logged By J. Morales



WELL DETAILS	PENE- TRATION TIME/ RATE	DEPTH (FEET)	SOIL SAMPLE		WATER SAMPLE	SYMBOL	LITHOLOGIC DESCRIPTION	WATER LEVEL
			NO.	TYPE				
Backfilled with bentonite chips		5	S1	SS			4.5-6.0' <u>MEDIUM-COARSE BLACK SAND</u> , 20% wood fragments, slightly moist.	
		10	S2	SS			9.5-10.5' <u>CLAYEY SILT</u> , 30% clay, blue-green, slightly moist, sticky, interlayered wood waste. Soil is mottled.	
		15	S3	SS			10.5-11.0' <u>MEDIUM SAND</u> , 10% silt, dark gray to black, slightly moist.	
		20	S4	SS			14.5-16.0' <u>CLAYEY SILT</u> , 5% fine sand, 20% clay, blue-green, slightly moist, interlayered wood fibers in silt.	
		25	S5	SS			19.5-20.5' <u>CLAYEY SILT</u> , 20% clay, blue-green, moist.	
		30	S6	SS			20.5-21.0' <u>SILT</u> , 18% fine sand, dark brown to black mottled, micaceous. Wood fiber banding at 21.0 ft.	
		35					24.5-26.0' <u>CLAYEY SILT</u> , 15-20% clay, glue-green, moist.	
							29.5-30.0' <u>CLAYEY SILT</u> , 20-30% clay, green-brown, moist, common laminations and mottling.	
							30.0-31.0' <u>FINE MEDIUM SAND</u> , 10% silt, dark brown to black, moist.	
					W-1			
								 32.4 ft. below ground

SEA-300-02a



Sweet, Edwards & Associates, Inc.

BORING LOGPROJECT MMI (Lampros Steel Site)Page 2 of 2Boring No. T-2

WELL DETAILS	PENE - TRATION TIME/ RATE	DEPTH (FEET)	SOIL SAMPLE		WATER SAMPLE	SYMBOL	LITHOLOGIC DESCRIPTION	WATER LEVEL
			NO.	TYPE				
Backfilled with bentonite chips		35	S7	SS	W-1		34.5-36.0' <u>SILTY FINE SAND</u> , 20-30% silt, light brown, saturated.	
					W-2		39.5-41.0' <u>SAND</u> , 10% silt, blue- green, saturated, micaceous.	
		40	S8	SS				
		45					SS = Split Spoon Sample. All samples taken by pushing sample into ground.	

SEA-300-02b

CRAW00014663

APPENDIX 4

**Ground-penetrating Radar Survey
Williamson and Associates Report**

LAMP2-TP.404bg

CRAW00014664

WILLIAMSON & ASSOCIATES, INC.

OCEANOGRAPHY AND MARINE GEOPHYSICS

1219 Westlake Ave. N.
Suite 111
Seattle, WA 98109
(206) 282-2396

Sweet, Edwards & Associates, Inc.
P.O. Box, Drawer D
Kelso, WA 98626

January 5, 1988

ATTENTION: Mr. Russ Bunker, R.G.

On December 26th, 1987, Williamson and Associates mobilized a geophysical survey team and a ground penetrating radar system to a site on the Willamete River, near St. Johns Oregon.

The purpose of the geophysical survey was to determine if Ground Penetrating Radar could be used to locate buried utilities, tanks or drums or other anomalous subsurface soil conditions at the site.

A series of test runs were made with the GPR over known targets of known depth, over various surficial soil types and across concrete structures.

Analysis of these data indicated that the GPR was only capable of achieving 6 to 9 feet of penetration over most of the area of interest. Tests prior to mobilizing and after returning from the site provided 30 feet of penetration assuring us that the system was fully operational. We felt that 15 to 20 feet of penetration was needed to be sure that no subsurface targets were missed.

We believe that the lack of penetration is a result of attenuation by the black-top surface which covers most of the site as well as the sand used for a grinding compound. We were unable to obtain any penetration into the concrete which is probably due to the internal rebar and screening.

We appreciated the opportunity to evaluate the GPR on this project and hope that we will have a chance to work with you again where the results will prove more successful.

Sincerely;

R. E. Sylwester

Williamson and Associates
Richard E. Sylwester
Senior Geophysicist

APPENDIX 5

**Electromagnetic (EM) Induction Survey
Geo-Recon Report**

LAMP2-TP.404bg

CRAW00014666

GEO RECON INTERNATIONAL

geophysics archeology geology

December 28, 1987

Sweet & Edwards, Inc.
506 Royal Street, West
Kelso, WA 98626

Re: St. Johns, Oregon Plant site.

Gentlemen:

At your request we completed an electromagnetic study of a site in St. Johns, Oregon adjacent to the Willamette River. The purpose of this study was to determine the probability for the existence of buried tanks within the confines of the site. The site was traversed at approximate ten foot spacings and any probable targets were not on the ground with survey paint. This was accomplished on December 27, 1987 by a two person field crew from Geo Recon.

Four possible targets were located and indicated to your field representative at the end of the study. An area south of the large building floor pad was also noted as having significantly different characteristics than the remainder of the site and may represent different deposits such as wasted concrete containing rebar or other metallic debris. Several subsurface pipes and a buried railroad track were also noted.

We trust this is sufficient for your needs and appreciate the opportunity to work for your firm again.

For: Geo Recon International Ltd.

Clyde A. Ringstad
Clyde A. Ringstad
Principal Geophysicist

APPENDIX 6
Laboratory Report
Soil and Ground Water Testing

LAMP2-TP.404bg

CRAW00014668

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

February 2, 1988

*Black sand composite
sample*

Randy Sweet
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

RE: MMI (LAMPROS STEEL SITE); CAS Work Order # 87728

Dear Randy:

Enclosed are the results of samples submitted to our lab on November 11, 1987. For your reference, our service request number for this work is 87728.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Randy Sweet
PROJECT: MMI (LAMPROS STEEL SITE)

February 2, 1988
WORK ORDER #: 87728

Analytical Report
mg/L in EP extract

Black
Sand

Sample Name:
Lab Code:

Black
Sand

11/11/87
728-1

Test Parameters

Maximum Level

Arsenic	5.0	<0.01
Barium	100	0.31
Cadmium	5.0	<0.005
Chromium	5.0	<0.01
Lead	5.0	<0.05
Mercury	0.2	<0.001
Selenium	1.0	<0.01
Silver	5.0	<0.01

Approved by:

Mike Shelton

Date:

2/2/88

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

February 2, 1988

Russ Bunker
Sweet & Edwards
P.O. Box 328
Kelso, WA 98626

TZ401.02
(Suspected Tank Fill
Pipes' W/ Sampler)

RE: MMI (LAMPROS STEEL SITE)

Dear Russ:

Listed below are the results of samples submitted to our lab on
December 22, 1987. For your reference, our service request
number for this work is 87817.

Please call if you have any questions.

Analytical Report
mg/L

Sample Name:	AT-3	AT-4	AT-5
Lab Code:	817-1	817-2	817-3
pH	5.8	5.5	5.9
Conductivity umhos/cm	80	68	88

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

Laboratory Analysis Request

DATE 12/21/82 PAGE 1 OF 1

PROJECT <u>Wux Trading</u> # <u>7410102</u>					ANALYSIS REQUESTED															GENERAL CHEMISTRY (Specify)				OTHER (Specify)				NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>2-1 Norm Wall</u>																												
ADDRESS																												
TELEPHONE																												
SAMPLERS NAME <u>Bunker</u> PHONE <u>766-473-3580</u>																												
SAMPLERS SIGNATURE <u>R. Bunker</u>																												
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/825/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	PH. COND ALK	NO ₃ /NO ₂ Cl SO ₄	Ca, Mg, Na, K	VOLATILE	PCB ₁									
1. AT-3	12/21/82	1315	817-1	WTR																				2				
2. AT-3	"	"	-1	"									✓											1				
3. AT-3	"	"	-1	"																				1				
4.																												
5.																												
6.																												
7.																												
8.																												

Relinquished By Sweet, Edwards & Assoc. <u>R. Bunker</u>		Relinquished By		Relinquished By		PROJECT INFORMATION		SAMPLE RECEIPT	
Signature <u>Kenneth C. Bunker</u>	Signature	Signature	Shipping I.D. No.	Total No. of Containers					
Printed Name <u>Sweet-Edwards</u>	Printed Name	Printed Name	VIA	Chain of Custody Seal					
Firm <u>12/21/82 1720</u>	Firm	Firm	Project	Received in good condition					
Date/Time	Date/Time	Date/Time	LAB NO.						
Received By <u>Thomas C. Bunker</u>		Received By		SPECIAL INSTRUCTIONS/COMMENTS					
Signature <u>Thomas C. Bunker</u>	Signature								
Printed Name <u>Thomas C. Bunker</u>	Printed Name								
Firm <u>12/21/82 1725</u>	Firm								
Date/Time	Date/Time								

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SEA-400-05

CRAW00014672

SWEET, LOWMEYER & ASSOCIATES, INC.

Kelso, WA (206) 423-3580

Redmond, WA (206) 881-0415

Laboratory Analysis Request

DATE 12/21/67 PAGE 1 OF 1

PROJECT <u>Hemp Trading</u>						ANALYSIS REQUESTED																		GENERAL CHEMISTRY (Specify)							OTHER (Specify)		NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>Nitin Mittal</u>																																	
ADDRESS _____																																	
TELEPHONE# _____																																	
SAMPLER NAME <u>R Bunker</u> PHONE# <u>26-473-3580</u>																																	
SAMPLER SIGNATURE <u>R Bunker</u>																																	
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO ₃ /NO ₂ , Cl SO ₄	Ca, Mg, Na, K	<u>volatile</u>	<u>PCBs</u>														
1. AT-4	12/21/17	1345	817-2	WTR															✓										2				
2. AT-4	"	"	-2	"																✓									1				
3. IT-4	"	"	-2	"								✓																	1				
4.																																	
5.																																	
6.																																	
7.																																	
8.																																	
Relinquished By Sweet, Edwards & Assoc. <u>[Signature]</u>					Relinquished By					Relinquished By					PROJECT INFORMATION					SAMPLE RECEIPT													
Signature <u>Russ Bunker</u>					Signature					Signature					Shipping I.D. No.					Total No. of Containers													
Printed Name <u>Sweet-Edwards</u>					Printed Name					Printed Name					VIA					Chain of Custody Seals													
Firm <u>12/21/17 1720</u>					Firm					Firm					Project					Received in good condition													
Date/Time					Date/Time					Date/Time										LAB NO.													
Received By <u>[Signature]</u>					Received By					Received By					SPECIAL INSTRUCTIONS/COMMENTS																		
Signature <u>[Signature]</u>					Signature					Signature																							
Printed Name <u>[Name]</u>					Printed Name					Printed Name																							
Firm <u>12/21/17 1735</u>					Firm					Firm																							
Date/Time					Date/Time					Date/Time																							

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SEA-400-05

CRAW00014673

Laboratory Analysis Request

DATE 12/21/63 PAGE 1 OF 1

PROJECT <u>Beach Trading</u> # <u>T24112</u>					ANALYSIS REQUESTED																	GENERAL CHEMISTRY (Specify)										OTHER (Specify)					NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>Kay Bell</u>																																					
ADDRESS <u>-</u>																																					
TELEPHONE# <u>-</u>																																					
SAMPLERS NAME <u>P. Brinker</u> PHONE# <u>264-443-1850</u>																																					
SAMPLERS SIGNATURE <u>P. Brinker</u>																																					
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Incl.)	TCLP ORGANICS	PH, COND ALK	NO ₃ /NO ₂ , Cl SO ₄	Ca, Mg, Na, K	volatiles	PCB																		
1. AT-5	12/21/82	MCD	817-3	WTR															✓										2								
2. AT-5	"	"	-2	"															✓										1								
3. AT-5	"	"	-3	"									✓																1								
4.																																					
5.																																					
6.																																					
7.																																					
8.																																					
Relinquished By Sweet, Edwards & Assoc. <u>P. Brinker</u>					Relinquished By					Relinquished By					PROJECT INFORMATION					SAMPLE RECEIPT																	
Signature <u>P. Brinker</u>					Signature					Signature					Shipping I.D. No.					Total No. of Containers																	
Printed Name <u>Sweet-Edwards</u>					Printed Name					Printed Name					VIA					Chain of Custody Seals																	
Firm <u>12/21/82</u> <u>1720</u>					Firm					Firm					Project					Received in good condition																	
Date/Time					Date/Time					Date/Time										LAB NO.																	
Received By <u>P. Brinker</u>					Received By					Received By					SPECIAL INSTRUCTIONS/COMMENTS																						
Signature <u>P. Brinker</u>					Signature					Signature																											
Printed Name <u>P. Brinker</u>					Printed Name					Printed Name																											
Firm <u>12/21/82</u> <u>1720</u>					Firm					Firm																											
Date/Time					Date/Time					Date/Time																											

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

February 2, 1988

Russ Bunker
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

T24C1.02

(Groundwater samples,
Test borings, T-1, T-2)

Groundwater samples from
T-1, T-2 borings

RE: MMI (LAMPROS STEEL SITE)

Dear Russ:

Listed below are the results of samples submitted to our lab on January 5, 1987. For your reference, our service request number for this work is 88002.

Please call if you have any questions.

Analytical Report

	Drainfield	— Black Sand —	
Sample Name:	T-1/W-1	T-2/W-1	T-2/W-2
Lab Code:	002-1	002-2	002-3
Nitrate-N	mg/L 2.4	0.14	0.10
Total Organic Carbon	mg/L 2.0	25	56
TOX	ppb <5	11.5	13.8

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton



Sweet, Edwards & Associates, Inc.

Kelso, WA (206) 423-3580

Redmond, WA (206) 881-0415

Laboratory Analysis Request

DATE 1-5-88

PAGE 1 OF 1

PROJECT <u>Arme Trading # T2401.02</u>					ANALYSIS REQUESTED															GENERAL CHEMISTRY (Specify)					OTHER (Specify)					NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>Russ Bunker</u>					BASE/NEU/ACID ORGAN. GC/MS/825/8270	VOLATILE ORGANICS GC/MS/824/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 804/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	PH. COND ALK	NO ₃ /NO ₂ Cl SO ₄	Ca, Mg, Na, K	NO ₃ TOC	TOX											
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE																										
1. T-1/W-1	1-4-88	1140	002-1	WTR														✓						1						
2. T-1/W-1	"	1140	002-1	WTR															✓					1						
3. T-2/W-1	"	1600	002-2	WTR														✓						1						
4. T-2/W-1	"	1600	002-2	WTR															✓					1						
5. T-2/W-2	"	1700	002-3	WTR														✓						1						
6. T-2/W-2	"	1700	002-3	WTR															✓					1						
7.																														
8.																														

Relinquished By Sweet, Edwards & Assoc.		Relinquished By		Relinquished By		PROJECT INFORMATION		SAMPLE RECEIPT	
Signature <u>Russ Bunker</u>		Signature		Signature		Shipping I.D. No.		Total No. of Containers	
Printed Name <u>Sweet Edwards</u>		Printed Name		Printed Name		VIA		Chain of Custody Seal	
Firm <u>1-5-88 1015</u>		Firm		Firm		Project		Received in good condition	
Date/Time		Date/Time		Date/Time				LAB NO.	
Received By <u>Steve Vincent</u>		Received By		Received By		SPECIAL INSTRUCTIONS/COMMENTS <u>Analyze wtr from settled sample, i.e., do not test sediment</u>			
Signature <u>Steve Vincent</u>		Signature		Signature					
Printed Name <u>CAS</u>		Printed Name		Printed Name					
Firm <u>1-5-88 1015</u>		Firm		Firm					
Date/Time		Date/Time		Date/Time					

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

CRAW00014676

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

February 2, 1988

Russ Bunker
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

*test Pit Soil Samples
Drain Field
Black Sand*

RE: MMI (LAMPROS STEEL SITE)

Dear Russ:

Enclosed are the results of samples, including PCB results, submitted to our lab on January 6, 1988. For your reference, our service request number for this work is 88012.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Colin Elliott / mms

Colin Elliott

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Russ Bunker
PROJECT: MMI (LAMPROS STEEL SITE)

February 2, 1988
WORK ORDER #: 88012

Analytical Report
(dry basis)

Sample Name	Lab Code	Oil & Grease %	TOX ppm	PCB ppm
TP-1/S-1	012-1	<0.01	<2	-
TP-4/S-2 <i>Dam field</i>	012-2	<0.01	<2	-
TP-7/S-1 <i>Black Sand</i>	012-3	0.04	294	<0.2
TP-7/S-2	012-4	0.05	2.9	-

Approved by:

Mike Shelton

Date:

2/2/88

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Russ Bunker

February 2, 1988

PROJECT: MMI (LAMPROS STEEL SITE)

WORK ORDER #: 88012

Volatile Organics Results
ug/Kg (ppb)

Sample Name: Lab Code:	Dranfield		Black Sand	
	TP-1/S-1 012-1	TP-4/S-1 012-2	TP-7/S-1 012-3	TP-7/S-2 012-4
Chloromethane	<50	<50	<50	<50
Vinyl Chloride	<50	<50	<50	<50
Bromomethane	<50	<50	<50	<50
Chloroethane	<50	<50	<50	<50
1,1-Dichloroethene	<50	<50	<50	<50
Methylene Chloride	<200	<200	<200	<200
Trans 1,2-Dichloroethene	<50	<50	<50	<50
1,1-Dichloroethane	<50	<50	<50	<50
Chloroform	<50	<50	<50	<50
1,1,1-Trichloroethane	<50	<50	<50	<50
Carbon Tetrachloride	<50	<50	<50	<50
Benzene	<50	<50	<50	<50
1,2-Dichloroethane	<50	<50	<50	<50
Trichloroethene	<50	<50	<50	<50
1,2-Dichloropropane	<50	<50	<50	<50
Bromodichloromethane	<50	<50	<50	<50
2-Chloroethylvinyl ether	<500	<500	<500	<500
Trans 1,3-Dichloropropene	<50	<50	<50	<50
Toluene	<50	<50	<50	<50
Cis 1,3-Dichloropropene	<50	<50	<50	<50
1,1,2-Trichloroethane	<50	<50	<50	<50
Tetrachloroethene	<50	<50	<50	<50
Dibromochloromethane	<50	<50	<50	<50
Chlorobenzene	<50	<50	<50	<50
Ethylbenzene	<50	<50	<50	<50
Bromoform	<50	<50	<50	<50
1,1,2,2-Tetrachloroethane	<50	<50	<50	<50
1,3 Dichlorobenzene	<50	<50	<50	<50
1,4 Dichlorobenzene	<50	<50	<50	<50
1,2 Dichlorobenzene	<50	<50	<50	<50
Acetone	<500	<500	<500	<500
Total xylenes	<100	<100	310	<100
Methyl Ethyl Ketone	<500	<500	<500	<500
Methyl Isobutyl Ketone	<500	<500	<500	<500

Approved by:

Mike Pelton

Date:

2/2/88



SI EL US SO S, I

Kelso, WA (208) 423-3580
Redmond, WA (208) 881-0415

Laboratory Analysis Request

DATE 1-6-88

PAGE 2

OF 2

PROJECT <u>Acme Tiding</u> # <u>T2401.02</u>					ANALYSIS REQUESTED															GENERAL CHEMISTRY (Specify)										OTHER (Specify)					NUMBER OF CONTAINERS
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN.	GC/MS/825/8270	VOLATILE ORGANICS	GC/MS/824/8240	HALOGENATED VOLATILE ORGANICS	601/8010	PHENOLICS	804/8040	POLYNUCLEAR	AROMATIC	610/8310	TOTAL ORGANIC CARBON (TOC)	415/9060	TOTAL ORGANIC HALIDE (TOX)	9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND	ALK	NO ₃ /NO ₂ -Cl	SO ₄	Ca, Mg, Na, K	ED10, 8020 VOLTS	TOX; oil & grease	PCB (CBE)					
1. TP-5/S-1	1/6/88	0850		SOIL																													1		
2. TP-5/S-1	"	0950		"																													1		
3. TP-7/S-1	"	1025		"																													1		
4. TP-7/S-1	"	1025		"																													1		
5. TP-7/S-2	"			"																													1		
6. TP-7/S-2	"			"																													1		
7.																																			
8.																																			

Relinquished By <u>Swet, Edwards & Assoc.</u>		Relinquished By		Relinquished By		PROJECT INFORMATION		SAMPLE RECEIPT	
Signature <u>Russ Bunker</u>	Signature	Signature		Signature		Shipping I.D. No.		Total No. of Containers	
Printed Name <u>Swet-Edwards</u>	Printed Name	Printed Name		Printed Name		VIA		Chain of Custody Seal	
Firm <u>1-6-88, 1545</u>	Firm	Firm		Firm		Project		Received in good condition	
Date/Time	Date/Time	Date/Time		Date/Time				LAB NO.	

Received By <u>John H. Hays</u>		Received By		Received By		SPECIAL INSTRUCTIONS/COMMENTS	
Signature <u>John H. Hays</u>	Signature	Signature		Signature		As of today (1/6/88) analyze only: ① TP-1/S-1 ② TP-4/S-2 ③ TP-7/S-1 TP-7/S-2	
Printed Name <u>JH H</u>	Printed Name	Printed Name		Printed Name			
Firm <u>1/6/88 1545</u>	Firm	Firm		Firm			
Date/Time	Date/Time	Date/Time		Date/Time			

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

CRAW00014680

Columbia Analytical Services, Inc.

FEB 03 1988

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

February 2, 1988

Contents of UST at TP-2

Russ Bunker
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

RE: MMI (LAMPROS STEEL SITE)

Dear Russ:

Enclosed are the results of samples submitted to our lab on January 12, 1988 for rush analysis. For your reference, our service request number for this work is 88023.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

Contents of UST at TP-2

CLIENT: Sweet & Edwards
--Russ Bunker
PROJECT: MMI (LAMPROS STEEL SITE)

February 2, 1988
WORK ORDER #: 88023

Analytical Report

Sample Name: Units Columbia Forge
Lab Code: 023-1

Organic Constituents

PCB	mg/kg	<0.5
Benzene	mg/kg	<1.0
Toluene	mg/kg	5.72
Ethyl Benzene	mg/kg	10.3
Total Xylene	mg/kg	85.0
Total TCP	mg/kg	<0.035
Pentachlorophenol	mg/kg	<0.010
TOX	mg/kg	32

Metals

Antimony	mg/kg	<1
Arsenic	mg/kg	<1
Beryllium	mg/kg	<4
Cadmium	mg/kg	<1
Chromium	mg/kg	<2
Copper	mg/kg	60
Lead	mg/kg	<10
Mercury	mg/kg	<0.5
Nickel	mg/kg	63
Selenium	mg/kg	<1
Silver	mg/kg	<10
Thallium	mg/kg	<1
Zinc	mg/kg	<8

Approved by: Mike Sullivan

Date: 2/2/88

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Russ Bunker
PROJECT: MMI (LAMPROS STEEL SITE)

February 2, 1988
WORK ORDER #: 88023

Analytical Report

Sample Name: Units Columbia Forge
Lab Code: 023-1

Other Constituents

TSS	%	11
Water	%	<0.2

Corrosivity

The pH of this non-aqueous sample is 5.0.

Ignitability

Closed cup flash point was greater than 140 deg. F.

Reactivity

Sample Characteristics

Will not detonate.
Does not react violently with water.
Does not generate sulfides upon acidification.
Cyanides found to be less than 1.0 mg/kg.

Approved by: Mike Shelton

Date: 2/2/88



Sweet, Edwards & Associates, Inc.

Kelso, WA (206) 423-3580

Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 1-11-82 PAGE OF

PROJECT <u>T 2401.02</u>					ANALYSIS REQUESTED														GENERAL CHEMISTRY (Specify)				OTHER (Specify)		NUMBER OF CONTAINERS
CME INFO. CONTACT <u>Howard Holmes / NW Testing Labs</u> ADDRESS <u>5405 N. Lagoon Ave</u> TELEPHONE <u>503-289-1778</u> SAMPLERS NAME <u> </u> PHONE <u> </u> SAMPLERS SIGNATURE <u> </u>					BASE/NEU/ACID ORGAN. GC/MS 825/8270	VOLATILE ORGANICS GC/MS 824/8240	HALOGENATED VOLATILE ORGANICS 801/8010	PHENOLICS 804/8040	POLYNUCLEAR AROMATIC 810/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO ₃ /NO ₂ , Cl SO ₄	Ca, Mg, Na, K								
1. <u>Columbia Forge</u>				<u>Oil</u>																					
2.																									
3.																									
4.																									
5.																									
6.																									
7.																									
8.																									
Relinquished By <u>Northwest Testing Labs</u> Signature <u>Howard B. Holmes</u> Printed Name <u>Howard B. Holmes</u> Firm <u>Northwest Testing Labs</u> Date/Time <u>Jan 11, 1982 / 1630</u>					Relinquished By <u> </u> Signature <u> </u> Printed Name <u> </u> Firm <u> </u> Date/Time <u> </u>					PROJECT INFORMATION Shipping I.D. No. <u> </u> VIA <u> </u> Project <u> </u>				SAMPLE RECEIPT Total No. of Containers <u> </u> Chain of Custody Seals <u> </u> Received in good condition <u> </u> LAB NO. <u> </u>											
Received By <u> </u> Signature <u> </u> Printed Name <u> </u> Firm <u> </u> Date/Time <u> </u>					Received By <u> </u> Signature <u> </u> Printed Name <u> </u> Firm <u> </u> Date/Time <u> </u>					SPECIAL INSTRUCTIONS/COMMENTS <u> </u>															

DISTRIBUTION: WHITE - return to shipper; YELLOW - lab; PINK - retained by analyzer

CRAW00014684

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

FEB 03 1988

February 2, 1988

Russ Bunker
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

Soil samples from UST
excavation at TP-2

RE: MMI (LAMPROS STEEL SITE)

Dear Russ:

Listed below are the results of samples submitted to our lab on January 19, 1988. For your reference, our service request number for this work is 88039.

Please call if you have any questions.

Analytical Report Units = % As Rec'd

Sample Name	Lab Code	Oil & Grease	Solids
Tank 1	039-1	0.01 100 ^{mg} /kg	75.2
Tank 2	039-2	0.02 200 ^{mg} /kg	89.5
Tank 3	039-3	0.02 100 ^{mg} /kg	78.5

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

DATE 1-12-68 PAGE 1 OF 1

SEA-400-05

CRAW00014686

APPENDIX E

APPENDIX E

**ANALYTICAL LABORATORY REPORT FOR
UNDERGROUND STORAGE TANK REMOVAL
SOIL SAMPLES**



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

March 19, 1987

Log #A870316-B1-2

PO#: 2842

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Sample ID: #1 - Skookum, 3/13/87
#2 - Yard, 3/13/87

Samples Received: March 13, 1987

Samples Collected by: Crosby & Overton

ANALYSIS -----	SAMPLE #1 -----	SAMPLE #2 -----
Gasoline*	< 1.0	16**
Diesel*	< 1.0	< 1.0
Lead	---	30.0

Results in mg/kg

* Analysis by extraction capillary GC/FID.

** Appears to contain some other high boiling oil and possibly some kerosene.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved by,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

*Soil sample
Yard*

SMC/gs

This report is for the sole and exclusive use of the above client. (no)
Samples are retained a maximum of 15 days from the date of this letter.

B 11587

CRAW00014689



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.

Portland, OR 97230

Phone: (503) 254-1794

March 24, 1987

Log #A870316-B1-2

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

ATTENTION: John Shore

SUBJECT: EP TOXICITY ANALYSIS

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980,
Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: #2 - Yard
Collected by: Sample collected and delivered by client.

Sample Received: March 16, 1987

ANALYSIS -----	RESULTS -----	LIMIT -----
Lead	< 0.100	5.0

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Results are reported in milligrams per liter (mg/L)

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

ordered with for 1st
2nd soil *OK*
file only E1
done.

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.

B 11588

CRAW00014690



COFFEY LABORATORIES, INC.

4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870319-K
PO#: 2864

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Analysis Requested: Total Hydrocarbons

Sample ID: #3 Weld Shop

Sample Date: March 19, 1987

Sample Received: March 19, 1987

ANALYSIS

RESULTS

Gasoline

< 4 mg/kg

Diesel

< 4 mg/kg

Analysis by capillary GC/FID

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

SMC/gs

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

*Soil anal
held &
(no r.)*

This report is for the sole and exclusive use of the above client.
Samples are retained a maximum of 15 days from the date of this letter.

B 11592

CRAW00014691

APPENDIX F

APPENDIX F

**EXPLORATION LOCATIONS ON PROPERTY
EAST OF THE CSC SITE**

LEVEL II
ENVIRONMENTAL SITE ASSESSMENT
ST. JOHNS RIVERFRONT PROPERTY
PORTLAND, OREGON

Prepared for
GRAYCO RESOURCES, INC.

March 15, 1989

CSA CUMMINGS, SENKEL & ASSOCIATES
CONSULTING ENGINEERS

HARVEY L. CUMMINGS, P.E.
Principal

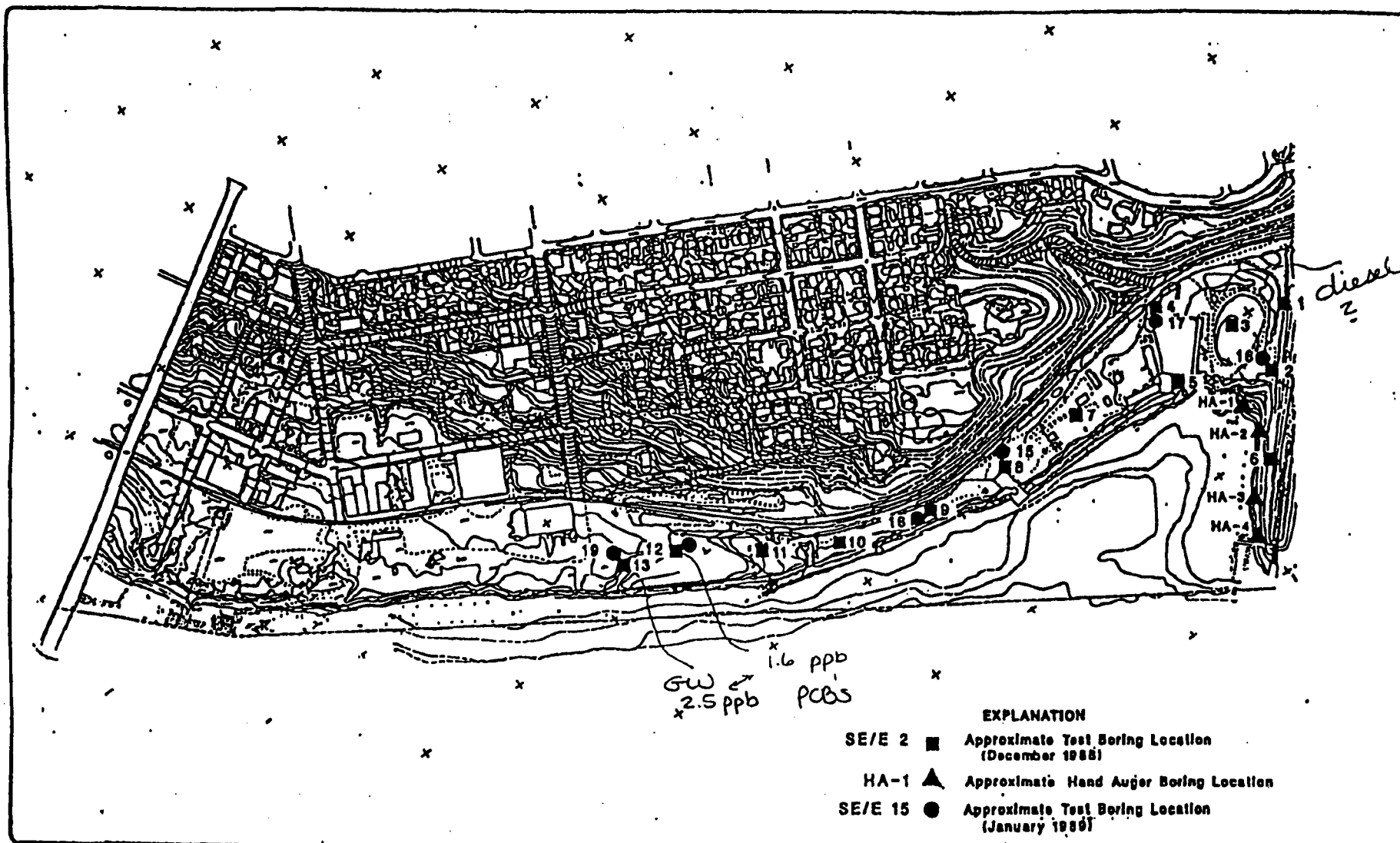
250 W. Clarendon, Gladstone, Oregon 97027
(503) 557-0506 Fax (503) 659-1040

SWEET-EDWARDS/EMCON, INC.
7504 S.W. Bridgeport Rd.
Portland, OR 97224

GRAYCO-R.315 LK
T8701.01

Rev. 1 3/15/89

CRAW00014694



Sweet-Edwards
EMCON

0 350 700
Scale in Feet



GRAYCO/ST. JOHNS RIVERFRONT PROPERTY
Test Boring and Hand Auger Boring Location Map

Figure 8

DATE 11/15/88
DWN. 10/11/88
APPD. SRH
REVISED
PROJECT NO. 70701

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-13
 PAGE 1 OF 1
 REFERENCE ELEV. $\frac{1}{2}$
 TOTAL DEPTH 35.00'
 DATE COMPLETED 12/9/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (IN COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	60	2-30 (NA)		5				0-5.5' Sandy clayey SILT, black, low to medium plasticity, wet (ML).
								5.5-6.5' Brick Rubble.
S-2	90	4-9-12 (21)		10				6.5-10.5' Silty CLAY, black, moderate to high plasticity, moist to wet (OH).
								10.5-15' Sandy silty CLAY, light brown, moderate plasticity, moist (CL). --- red brick rubble at 11.25 to 11.5 feet.
S-3	95	3-7-8 (15)		15				15-20' Silty clayey SAND, light brown, fine grained, moist (SM).
S-4	65	4-6-8 (14)		20				20-25' Poorly graded SAND, grayish-brown, fine grained, trace silt, moist (SP).
S-5	100	2-4-4 (8)		25				25-30.5' Sandy silty CLAY, brownish-gray, moderate to high plasticity, moist (CL).
								--- first encountered water at 30.5 feet.
S-6	120	3-5-8 (13)		30				30.5-35' clayey silty SAND, grayish-brown, fine to medium grained, oily sheen on water and 30 foot soil sample, saturated (SM).
				30.5'				Bottom of boring at 35 feet.
				35				

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. Minor oily sheen on water sample. Drilled to 35 feet to enhance sampling. Backfilled with bentonite.




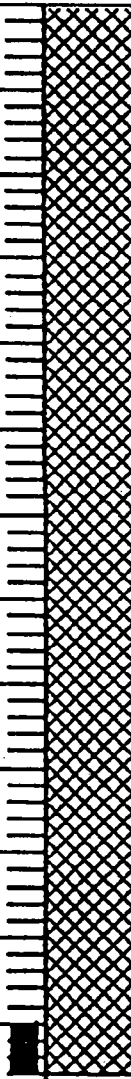

SWEET-EDWARDS/EMCON

T8701...GRAYC.JLC.G10489

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY S. Ryman

BORING NO. SE/E-19
 PAGE 1 OF 1
 REFERENCE ELEV. $\frac{1}{2}$
 TOTAL DEPTH 31.50'
 DATE COMPLETED 1/27/89

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1		2-3-4		30 30.5'				0-31.5' SAND, brown, medium-to-fine with minor silt, 15% silt, 30% medium sand, 55% fine, moist. --- color change to gray at 30 feet. --- first encountered water at 30.5 feet. Bottom of boring at 31.5 feet.

REMARKS

Drilled adjacent to SE/E-3.



SWEET-EDWARDS/EMCON

T8701.01.GRAYC.JLG.820789

TABLE 3
GRAYCO/ST. JOHNS RIVERFRONT PROPERTY
GROUND WATER SAMPLE TESTING PARAMETERS

SAMPLE I.D.	SAMPLE COLLECTION DATE	PRIORITY POLLUTANT METALS*	TOX	PCB	PAH	PENTA- CHLORO-	VOLATILE ORGANICS	PESTICIDES	VOLATILE ORGANICS	BASE NEUTRAL EXTRACTABLES	HYDROCARBON SCAN METHODS
						PHENOL	METHOD 601	METHOD 608	METHOD 624	METHOD 625	3510/8015 MODIFIED
SE/E-1	12/5/88	X	X	X	X	X					
SE/E-2	12/5/88	X		X	X	X			X	X	
SE/E-3	12/6/88	X	X	X	X	X					
SE/E-4	12/6/88	X	X	X	X	X					
SE/E-5	12/6/88	X	X	X	X	X					
SE/E-6	12/7/88	X		X	X	X			X	X	
SE/E-7	12/7/88	X	X	X	X	X					
SE/E-8	12/7/88	X	X	X	X	X					
SE/E-9	12/8/88	X	X	X	X	X					
SE/E-10	12/8/88	X	X	X	X	X					
SE/E-11	12/8/88	X	X	X	X	X					
SE/E-12	12/9/88	X	X	X	X	X					
SE/E-13	12/9/88	X	X	X	X	X					
SE/E-14	1/26/89			X**							
SE/E-17	1/26/89	X**					X	X			
SE/E-19	1/27/89			X ¹							X ²
HA-4W	12/12/88	X	X	X	X	X					

NOTE:

TOX = Total Organic Halides

PCB = Polychlorinated Biphenols

PAH = Polyaromatic Hydrocarbons

* = Samples SE/E-1 through SE/E-5 were not field filtered.

** = Filtered and unfiltered samples collected.

1 = Filtered water sample and unfiltered water with concentrated oil sheen.

2 = Test conducted on oil from SE/E 19 unfiltered water sample.

GRAYCO-TJ.315 PE
T8701.01

TABLE 4, continued

Page 3 of 3

BORING I.D.	SAMPLE I.D.	SAMPLE INTERVAL ft.	DATE COLLECTED	DATE SCREENED	PID*	SAMPLE SUBMITTED FOR TESTING	COMPOSITE SAMPLE IDENTIFICATION
SE/E-13	SE/E-13-5	5-6.5	12/9/88	12/10/88	49	**	SE/E-13-A
	SE/E-13-10	10-11.5	12/9/88	12/10/88	48	**	
	SE/E-13-15	15-16.5	12/9/88	12/10/88	51	X	
	SE/E-13-20	20-21.5	12/9/88	12/10/88	18	**	SE/E-13-B
	SE/E-13-25	25-26.5	12/9/88	12/10/88	35	**	
SE/E-14	SE/E-14	30.5-32	1/26/89	NA	NA	X	NA
SE/E-15	SE/E-15-20	20-21.5	1/26/89	NA	NA	X	NA
SE/E-16	SE/E-16-10	10-11.5	1/26/89	NA	NA	X	NA
SE/E-19	SE/E-19-30	30-31.5	1/27/89	NA	NA	X	NA

NOTE:

*PID = Photoionization detector
 NA = Not applicable

GRAYC-T4.315 PE
 T8701.01

TABLE 5
GRAYCO-ST. JOHNS RIVERFRONT PROPERTY
SOIL QUALITY LABORATORY RESULTS

SAMPLE I.D.	PCB (mg/kg)	TOX (mg/kg)	OIL AND GREASE (%)	BTEX METHOD 820 (mg/kg)	HYDROCARBON SCAN (mg/kg)
SE/E-1-10	ND	1	<0.02		
SE/E-2-10	ND	2	0.068		
SE/E-3-10	ND	ND	<0.02		
SE/E-4-20	ND	ND	<0.02		
SE/E-5-10	ND	ND	<0.02		
SE/E-6-20	ND	ND	<0.02		
SE/E-7-10	ND	1	<0.02		
SE/E-8-20	ND	1	0.054		
SE/E-9-15	ND	ND	<0.02		
SE/E-10-25	ND	ND	<0.02		
SE/E-11-15	ND	ND	<0.02		
SE/E-12-A*	ND				
SE/E-12-15	ND	ND	<0.02		
SE/E-12-B*	ND				
SE/E-13-A*	ND				
SE/E-13-10	ND	1	<0.02		
SE/E-13-B*	ND				
SE/E-14	ND				
SE/E-15-20				ND	ND
SE/E-16-10				ND	ND
SE/E-17	No soil samples taken.				
SE/E-18	No soil samples taken.				
SE/E-19-30	ND			ND	ND
HA-1*	ND	1	<0.02		
HA-2*	ND	2	0.052		
HA-3*	ND	ND	0.056		
HA-4*	ND	ND	<0.02		
Detection Limits	1.0	1.0	0.02	.05	5
GRAYC-T5.315 PE T8701.01					

Table 5 (Continued)

NOTE:

PCB = Polychlorinated Biphenyl

TOX = Total Organic Halides

BTEX = Benzene, Toluene, Ethylbenzene, Xylene

Hydrocarbon Scan - Diesel, Gasoline

* = Composite Soil Samples

GRAYC-T5.315. PE
T8701.01

CRAW00014701

TABLE 6
GRAYCO-ST. JOHNS RIVERFRONT PROPERTY
GROUND WATER QUALITY LABORATORY RESULTS
SELECT ORGANIC CONSTITUENTS (ug/L)

SAMPLE I.D.	PCB	TOX	PAH	PENTA- CHLORO- PHENOL	PESTICIDES METHOD 608	VOLATILE ORGANICS METHOD 601
SE/E-1	ND	39	ND	ND	-	-
SE/E-2	ND	*	ND	ND	-	-
SE/E-3	ND	34	ND	ND	-	-
SE/E-4	ND	44	ND	ND	-	-
SE/E-5	ND	21	ND	ND	-	-
SE/E-6	ND	*	ND	ND	-	-
SE/E-7	ND	26	ND	ND	-	-
SE/E-8	ND	13	ND	ND	-	-
SE/E-9	ND	28	ND	ND	-	-
SE/E-10	ND	14	ND	ND	-	-
SE/E-11	ND	12	ND	ND	-	-
SE/E-12	2.5	7	ND	ND	-	-
SE/E-13	1.6	17	ND	ND	-	-
SE/E-14	ND**	-	-	-	-	-
SE/E-17	-	-	-	-	ND	ND
SE/E-19	ND***	-	-	-	-	-
HA-4	ND	45	ND	ND	-	-
Detection Limits	1 ¹	5	1	10	Variable	Variable

GRAYC-T6.315 PE
T8701.01

Table 6 (continued)

NOTE:

Detection Limits 0.2

* = Tested for volatile and semivolatile organic compounds, Methods 8240 and 8270. No compounds were detected.

** = Filtered and unfiltered sample

*** = Filtered water and unfiltered water with concentrated oil sheen tested.

- = Not tested.

1 = Detection limit for oil contaminated sample from SE/E 19 was 1 ppm.

PCB = Polychlorinated Biphenyl (Total Arachlor)

TOX = Total Organic Halides

PAH = Polyaromatic Hydrocarbons

GRAYC-T6.315 PE
T8701.01

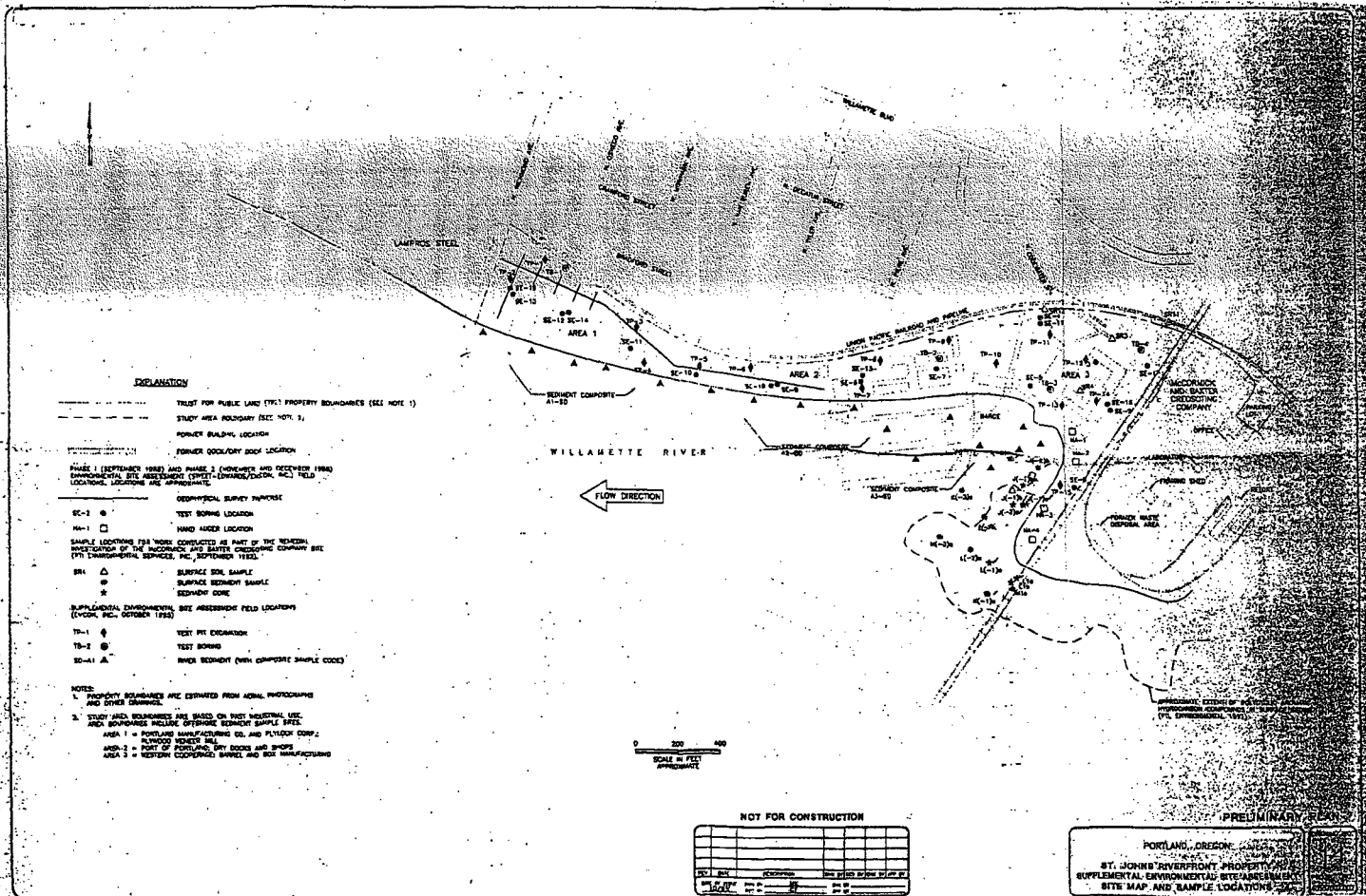


Table 5-2

**Summary of Soil Samples Collected
and Laboratory
Analysis
Trust for Public Land, St Johns Riverfront Property**

Analysis Requested *													
Sample ID	Collector	Hydro- carbon Scan	Oil and	TOX	BTEX	VOC	SVOC	PCBs	PCP	PCBs	PAHs	Priority Pollutant	Archived
		(8015M)	Grease			(8260)	(8270)	(8080)	(8150A Mod.)	(8080)	(8310)	Metals ^b	
Area 1: Portland Manufacturing Co. (Plylock Corp), Plywood Mill													
<u>Test Pits</u>													
TP-1													X
TP-2						X							
TP-3						X				X		X	
TP-4													X
A1C1		X					X						
A1C2										X		X	
<u>Test Borings</u>													
SE/E-10-25	SE/E		X	X				X					
SE/E-11-15	SE/E		X	X				X					
SE/E-12-A ^d	SE/E							X					
SE/E-12-15	SE/E		X	X				X					
SE/E-12-B ^d	SE/E							X					
SE/E-13-A ^d	SE/E							X					
SE/E-13-10	SE/E		X	X				X					
SE/E-13-B ^d	SE/E							X					
SE/E-14	SE/E							X					
SE/E-16-10	SE/E	X			X			X					
SE/E-19-30	SE/E	X			X			X					
TB-1-15S						X							
TB-1-SC1								X					
Area 2: Port of Portland, Dry Dock and Shops													
<u>Test Pits</u>													
TP-6													X
TP-7										X			
TP-7A													X
TP-8													X
TP-9						X							
TP-9A													X
TP-10													X
A2C1		X									X		
A2C2												X	
A2C3												X	
A2C4										X			
<u>Test Borings</u>													
SE/E-7-10	SE/E		X	X				X					
SE/E-8-20	SE/E		X	X				X					
SE/E-9-15	SE/E		X	X				X					
SE/E-15-20	SE/E	X			X			X					
TB-2-15S						X							
TB-2-SC1										X			X

Table 5-2

**Summary of Soil Samples Collected
and Laboratory
Analysis
Trust for Public Land, St Johns Riverfront Property**

		Analysis Requested ^a										Priority	
		Hydro- carbon Scan (8015M)	Oil and Grease	TOX	BTEX	VOC (8260)	SVOC (8270)	PCBs (8080)	PCP (8150A Mod.)	PCBs (8080)	PAHs (8310)	Pollutant Metals ^b	Archived ^c
Sample ID	Collector												
Area 3: Western Cooperaage													
<u>Surface Soil Samples</u>													
<u>Test Pits</u>													
TP-11						X							
TP-12													X
TP-13													X
TP-14													X
TP-15									X				
A3C1		X					X			X			
A3C2											X		
A3C3											X		
A3C4									X				
<u>Hand-Auger Borings</u>													
HA-1			X	X				X					
HA-2			X	X				X					
HA-3			X	X				X					
HA-4			X	X				X					
<u>Test Borings</u>													
SE/E-1-10	SE/E		X	X				X					
SE/E-2-10	SE/E		X	X				X					
SE/E-3-10	SE/E		X	X				X					
SE/E-4-20	SE/E		X	X				X					
SE/E-5-10	SE/E		X	X				X					
SE/E-6-20	SE/E		X	X				X					
SE/E-17													
TB-4-1SS						X							
TB-4-SC1									X		X		
TB-3-SC1									X	X	X		
Willametter River Sediments													
<u>Sediment Samples</u>													
A1-SD-1		X				X	X		X	X	X	X	
A2-SD-2		X				X	X		X	X	X	X	
A3-SD-3		X				X	X		X	X	X	X	
NOTE: XXXXXXXXXX													
^a Represents USEPA method number. E.G. (8260) is USEPA Method 8260 for volatile organic compounds using gas chromatography and mass spectral analysis.													
^b Priority pollutant metals: Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, Zn.													
^c Archived samples were submitted to CAS for holding without requesting analysis.													
^d Composite soil sample.													

Table 5-8

**Summary of PAHs Detected in Sediment Samples
(ug/Kg)
Trust for Public Land, St Johns Riverfront Property**

Analyte	Sample Identification			
	MRL	A1-SD-1 ^a	A2-SD-2 ^a	A3-SD-3 ^a
Napththalene	0.1	0.5	<0.3	<0.3
Acenaphthylene	0.1	0.5	<0.3	<0.3
Acenaphthene	0.1	0.5	<0.3	<0.3
Fluorene	0.02	<0.1	<0.06	0.09
Phenanthrene	0.01	1.4	0.14	0.21
Anthracene	0.01	0.18	0.03	0.06
Fluoranthene	0.02	2	0.23	0.37
Pyrene	0.02	2.7 ^b	0.2	0.35
Benz(a)anthracene	0.01	1.5	0.09	0.15
Chrysene	0.01	2.9 ^b	0.13	0.21
Benzo(b)fluoranthene	0.02	1.3	0.11	0.18
Benzo(k)fluoranthene	0.01	0.67	0.05	0.08
Benzo(a)pyrene	0.01	1.9	0.1	0.15
Dibenzo(a,h)anthracene	0.01	<0.2 ^c	<0.03	<0.3
Benzo(g,h,i)perylene	0.02	1.6	0.1	0.11
Indeno(1,2,3-cd)pyrene	0.01	0.98	0.05	0.06
Note: MRL = method reporting limit. a = MRLs are elevated because of the low percent solids in the sample as recieved. b = Result is from the analysis of a diluted sampled, performed on 11/2/95. Dilution factor: 50. c = MRL is elevated because of matrix interferences and because the sample required diluting. Dilution Factor:5.				

Table 5-9

**Summary of Metals Detected in Sediment Samples
(mg/Kg)
Trust for Public Land, St Johns Riverfront Property**

Analyte	Sample Identification			
	MRL	A1-SD-1 ^a	A2-SD-2 ^a	A3-SD-3 ^a
Antimony	10	ND	ND	ND
Arsenic	1	4	4	4
Berllium	1	ND	ND	ND
Cadmium	1	ND	ND	ND
Chromium	2	18	33	33
Copper	2	26	60	84
Lead	20	24	28	53
Mercury	0.2	ND	ND	0.2
Nickel	10	20	23	23
Selenium	1	ND	ND	ND
Silver	2	ND	ND	ND
Thallium	1	ND	ND	ND
Zinc	2	103	131	178
Note: MRL = method reporting limit ND = not detected above the MRL				

EXPLORATORY TEST PIT LOG

PROJECT NAME *TP-2*
 LOCATION *54. Johns*
 DUG BY *Stratus, Inc.*
 METHOD *Backhoe*
 LOGGED BY *Mike Free*

TEST PIT NO. *TP-2*
 PAGE *1*
 GROUND ELEV. *4.0*
 TOTAL DEPTH *4.0*
 DATE COMPLETED *10/20/15*

Sample at (ft)	Sample Depth (ft)	FID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
<i>TP-2</i> <i>(115)</i>	<i>0-4.0</i>	<i>0</i>					<i>0-4ft: sandy gravelly silt, brown (various shades) compact; damp; common asphalt debris, some concrete and ceramic, fine to coarse gravel (FILL) few plastic, wood</i>
				5			
				10			
				15			
				20			

REMARKS



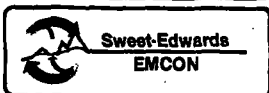
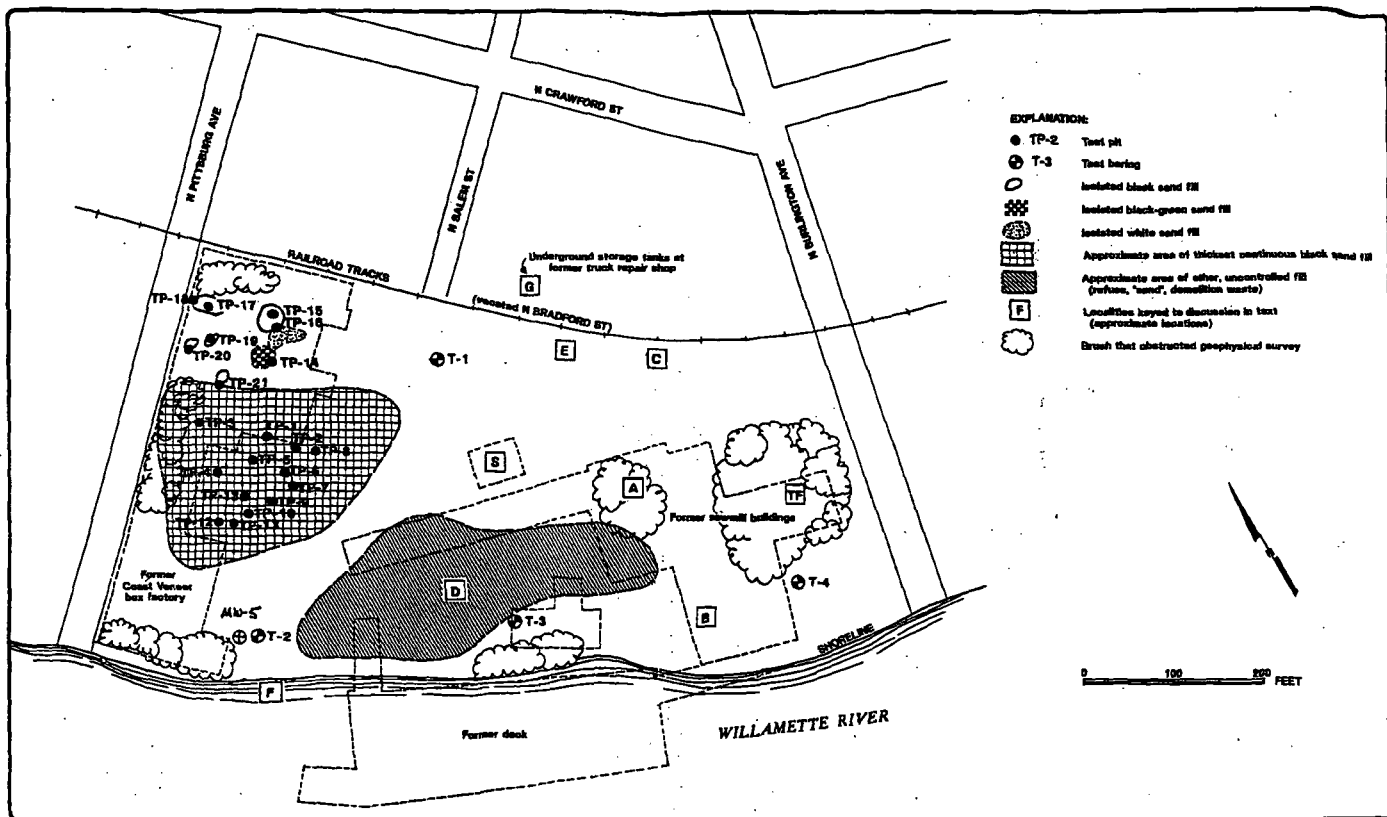
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APPENDIX G

CRAW00014710

APPENDIX G

**FIGURE 2 FROM JULY 20, 1989 SWEET-
EDWARDS/EMCON REPORT**



PDC PROPERTY
PORTLAND, OREGON
Site Map
Figure 2

DATE 7/89
DWN
APPD
REVIS
PROJECT NO.
77409.01